

The Terebridae of Fiji

(Mollusca : Gastropoda)

BY

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(Plates 4 to 7; 13 Text figures)

THIS FAUNAL STUDY is the fifth in the series of faunal monographs on the mollusks of Fiji. Records were based on specimens collected by resident collectors and the authors, by methods of hand-collecting and boat dredging to a depth of 20 fathoms.

The recent faunal list of Terebridae published by J. CATE & R. D. BURCH (1964) proved to be of great assistance in the elucidation of Fijian terebrid material, since all Fiji records in this list were based exclusively on the junior author's collection; thus all previous identifications could be confirmed and verified.

The majority of Terebridae have an Indo-West Pacific distribution, ranging from the Red Sea region to Polynesia and the Hawaiian Islands; there are no species endemic to the Fiji Islands.

Notes on the geography of the Fiji Islands and other pertinent data have been given in a previous publication (CERNOHORSKY, 1964).

HABITAT AND VARIATION

Members of the family Terebridae are primarily sand-dwellers; they inhabit clean, muddy or silty sand substrates, and occasionally are dredged on substrates consisting of broken coral and sand. Certain species prefer a habitat of clean sand thickly interspersed with weed. Terebridae are both diurnal and nocturnal and display great activity a few minutes after the turn of the tide, similar to members of the families Mitridae, Volutidae and Naticidae. This activity rhythm is constant and persistent in species inhabiting sand-patches of the intertidal zone, and the track-

movement is generally directed towards the incoming tide. The activity rhythm of the Terebridae is timed to coincide with the ceasing of water-agitation with the receding tide and recommencement on the rising tide. Sand-patches on reefs where wave-action is violent are generally barren of Terebridae; sandy stretches surrounding sheltered beaches and bays of outer islands are the most prolific hunting grounds of terebrids, especially the larger species. The amplitude of oxygen-saturation at low tide may have a direct bearing on the peak activity of Terebridae at this time.

Marine Mollusca, and Terebridae are no exception, are generally subject to a much greater variation in relation to environment and other factors than would be realized by workers whose experience lies only with museum collections. In cases where varietal names have been assigned to forms which are undoubtedly the result of direct influence of environment, these have been dismissed as useless synonyms; only with a few exceptions are such varieties restricted in geographical range and may validly be regarded as geographical races or subspecies. The range of variation, diverse as it may be, is by no means infinite, and the majority of specimens from a restricted geographical region will generally fall within the established range of variability.

THE ANIMAL

The structure of the animal is that of a typical gastropod, that is, it consists of a body and foot, mantle, siphon, tentacles, eyes, proboscis, poison apparatus, sexual and vegetative organs, and an operculum.

The foot is moderately small in relation to shell-length but powerfully muscular and cleaved anteriorly; in shape it is bluntly truncated anteriorly and pointedly rounded posteriorly.

The proboscis is generally very large and invertible in *Terebra s. str.* Examination of almost forty specimens of the more common species of *Terebra* failed to disclose a radular ribbon. The food is most probably conveyed directly to the gut by the invertible proboscis. The function of the poison gland in Terebridae, however, is less clear.

The eyes are small and situated on the tips of very small eye-stalks; in some species the eyes are attached to the stalks a short distance below the summits.

The penis is generally "scimitar-shaped" and from 15% to 30% of the shell-length in size, hidden by the thin mantle cover and facing backwards.

The operculum is either broad and oval or slender and elliptical and is of great diagnostic assistance in the separation of living forms of Terebridae.

GENERA OF TEREBRIDAE

Numerous generic and subgeneric names have been proposed from time to time for assemblages of species of Terebridae. Species of terebrids have been placed in the genus *Buccinum* by LINNAEUS (1758), *Epitonium* by RÖDING (1798), *Terebra* by LAMARCK (1799), and *Vertagus* by LINK (1807). BRUGUIÈRE (1789, p. 15), who established the genus *Terebra*, failed to include any nominal species in his new genus. LAMARCK (1799) listed *Terebra subulata* (LINNAEUS) as the only species of BRUGUIÈRE's genus, and this species becomes the type-species of *Terebra* BRUGUIÈRE by subsequent monotypy. H. & A. ADAMS (1853 to 1858) combined all known Terebrid species under the familial name Terebridae and established the genus *Hastula*. DALL (1908) and BARTSCH (1923) subdivided the family into various sections and established subdivisions of the family, some of which are used as subgenera by recent authors. OYAMA (1961, 1961 a) added several taxonomic units to the family besides having re-organized the group. KURODA & HABE (1952) accept a division of four genera in the family Terebridae, i. e. *Terebra* BRUGUIÈRE, 1789, *Hastula* H. & A. ADAMS, 1853, *Diplomeriza* DALL, 1919 (= *Duplicaria* DALL, 1909) and *Terenolla* IREDALE, 1929. We have on anatomical grounds followed this arrangement with only minor additions.

The genus *Terebra s. str.* is characterized by the absence of a radular ribbon. *Duplicaria* has a radular ribbon consisting of two curved teeth per row, with additional

denticles which are absent in *Hastula*. The genus *Hastula* has a radula of some two dozen rows of slender curved teeth. The radular teeth of *Impages* E. A. SMITH, 1873 (*vide* THIELE, 1931) are appreciably different from those of *Hastula*, so that *Impages* had to be retained as a full genus for the species *I. hectica* (LINNAEUS).

Subgenera of Terebridae have often been based on single conchological characters, mostly those of sculpture, e. g. the punctate subsutural groove separating *Hastula s. str.* from *Punctoterebra* BARTSCH, 1923, or the punctostriate grooves and cords separating *Dimidacus* IREDALE, 1929, from *Perirhoe* DALL, 1908. Consequently authors have assigned species to these various subgenera in an amazingly haphazard fashion. For subgeneric sections we have accepted the arrangement of recent writers (BURCH, 1964, 1965), with the exception of *Punctoterebra* BARTSCH and *Dimidacus* IREDALE, and we intend to leave the question of a more precise classification for future consideration. The existence of smooth and punctate forms of *Hastula penicillata* (HINDS), makes the validity of the subgenus *Punctoterebra* suspect.

ACKNOWLEDGMENTS

We would like to acknowledge our gratitude to Mr. R. D. Burch for his assistance with our project. Mr. Burch has only recently worked with Fijian Terebridae, mainly those from the Jennings collection and had the opportunity to compare these with specimens of the species from neighbouring territories. His findings and opinions were freely made available to us with other information pertaining to Fijian Terebridae.

We offer our thanks to Mr. N. Tebble and Mr. S. P. Dance from the British Museum (Natural History) for photographs of E. A. Smith's holotypes; we also would like to record our appreciation to the Trustees of the British Museum for permission to reproduce these holotype photographs in this paper.

We are grateful to Dr. O. Paget, Naturhistorisches Museum, Vienna, for information concerning the holotype of *Buccinum candidum* BORN.

We have consulted several Fiji collections in search for new geographical records and specific variants. We would like to thank the following collectors for the opportunity of having their collections made available to us: Mr. and Mrs. P. Bean, Ba; Mr. and Mrs. R. Browne, Nausori; Mr. J. Farkas, Vatukoula; Mr. and Mrs. Freitag, Suva; Mrs. J. Hill, Suva; Mr. and Mrs. W. Erich, Deuba; Mr. and Mrs. R. Gell, Suva; Mr. and Mrs. Miller, Tailevu; Mr. K. Mijts, Lautoka; and Mr. and Mrs. I. Morse, Lautoka.

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DESCRIPTION OF SPECIES

Toxoglossa TROSCHEL, 1848

TEREBRIDAE H. & A. ADAMS, 1853

Terebra BRUGUIÈRE, 1789

Type species: *Buccinum subulatum* LINNAEUS, 1767
 = *Terebra subulata* (LINNAEUS, 1767)

Terebra s. str.1. *Terebra* (*Terebra*) *guttata* (RÖDING, 1798)

(Plate 4, Figure 5)

1758. *Buccinum maculatum* LINNAEUS, (pars), Syst. Nat. ed. 10, p. 741, no. 415 (RUMPHIUS, 1705, pl. 30, fig. D)
 1767. *Buccinum subulatum* LINNAEUS (pars), Syst. Nat., ed. 12, p. 1205, no. 480 (SEBA, 1758, pl. 56, fig. 11)
 1798. *Epitonium guttatum* RÖDING, Mus. Bolten., p. 94
 1817. *Buccinum oculatum* DILLWYN, Descr. cat. rec. shells, 2: 642
 1845. *Buccinum ornatum* "MARTYN," CHENU, Univ. Conch. p. 25, pl. 33, fig. 1
 1858. *Terebra nebulosa* LORIS, Journ. Conchyl. 7: 90, pl. 1, fig. 4 (non SOWERBY, 1825; nec KIENER, 1839)
 1859. *Terebra loroi* DESHAYES, Proc. Zool. Soc. London, p. 313, no. 211 (nom. nov. pro *T. nebulosa* LORIS, 1858)
 1869. *Terebra sculptilis* PEASE, Amer. Journ. Conch. 5: 65
 1915. *Epitonium guttatum* DALL, Ind. Mus. Bolten., p. 30 (valid emendation)

Shell: Shell large and slender; orange to orange-brown in colour, rarely dark fawn, ornamented with two rows of large round white and slightly elevated spots. Whorls flattened, slightly convexly rounded at sutures, numbering about 21 apart from protoconch. Body whorl with two rows of large white convex spots, ultimate row disappearing into the white or flesh-coloured aperture; numerous but faint finely punctate lines encircle the body whorl, and additional growth-marks make the shell appear grooved. Columella white, flat, with a raised cord on the outer margin; anterior canal straight.

Size: 65 to 130 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. - From the Red Sea through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: *Buccinum candidum* BORN, 1780, is possibly identical with this species. BORN's holotype, which is preserved in the Vienna Natural History Museum, has been labelled *Terebra oculata* LAMARCK (Dr. Paget, in litt.).

2. *Terebra* (*Terebra*) *subulata* (LINNAEUS, 1767)

(Plate 4, Figure 2)

1758. *Buccinum maculatum* LINNAEUS (pars), Syst. Nat., ed. 10, p. 741, no. 415 (RUMPHIUS, 1705, pl. 30, fig. B; GUALTIERI, 1742, pl. 56, fig. B)
 1767. *Buccinum subulatum* LINNAEUS (pars), Syst. Nat., ed. 12, p. 1205, no. 480
 1810. *Terebrum tigreum* MONTFORT, Conch. Syst., 2: 430, fig. 2
 1811. *Terebra fusca* PERRY, Conchology, 5, pl. 16, fig. 3 (non DAUTZENBERG, 1935)
 1845. *Buccinum varium* "MARTYN," CHENU, Univ. Conch., p. 26, pl. 33, fig. 2a
 1859. *Terebra tigrina* CHENU, Man. Conch., 1: 219, fig. 1207 (non *Buccinum tigrinum* GMELIN, 1791)
 1921. *Terebra taurina* DALL, Nautilus, 34: 125 (non *Buccinum taurinum* SOLANDER in LIGHTFOOT, 1786)

Shell: Shell large, slender and smooth; cream to fawn in colour, rarely pale brown, ornamented with two rows of squarish or rectangular, often equal sized, dark brown blotches on whorls. Whorls flat, convexly rounded at sutures, numbering about 18 apart from protoconch; early whorls axially plicate. A spiral groove is situated anteriorly from the sutures; groove prominent on early whorls but often obsolete on later whorls. Body whorl with 3 rows of dark brown blotches, ultimate row disappearing into the white or pale fawn aperture; columella white, centrally undulate and plicate; anterior canal recurved.

Juvenile specimens have somewhat concave whorls with faint axially curved growth lines and spiral lines and a distinct presutural fasciole; sutures crenulate, early whorls plicate. Colour pattern is complete, with the brown blotches extending over the sutures.

Size: 35 to 168 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Moderately common.



Figure 1

Operculum of *Terebra subulata* (LINNAEUS)

Distribution: Throughout the Fiji Islands. – From the Red Sea through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: *Terebra achates* WEAVER, 1960, a species endemic to the Hawaiian Islands, is superficially similar but differs mainly in having whorls sculptured with from four to seven punctate spirals which are intersected by axially curved obsolete axials in the form of growth striae.

(*Oxymeris*) DALL, 1908

Type species: *Buccinum maculatum* LINNAEUS, 1758
= *Terebra maculata* (LINNAEUS, 1758).

3. *Terebra (Oxymeris) chlorata* LAMARCK, 1822

(Plate 4, Figure 8)

1822. *Terebra chlorata* LAMARCK, Anim. sans Vert. 7: 288

1834. *Terebra knorri* GRAY, Proc. Zool. Soc. London, p. 59

Shell: Shell moderate in size, moderately heavy and ventricose, smooth; ivory-white in colour, ornamented with irregular violet-brown blotches on the presutural band and another row of blotches on the whorl; the latter are connected to the sutures by irregular wavy lines. Whorls flat and smooth, numbering about 14 apart from protoconch; early whorls obsoletely plicate. Presutural band defined by a moderately deep spiral groove. Body whorl with two rows of violet-brown blotches, followed by a narrow interrupted peripheral band and an ultimate band of brown blotches which enter the aperture. Columella white, straight, plicate, and with a prominent rounded cord; interior of aperture whitish.

Size: 55 to 85 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Moderately uncommon.

Distribution: Throughout the Fiji Islands. – From East Africa through the tropical Indo-Pacific to Polynesia and Hawaii.

4. *Terebra (Oxymeris) crenulata* (LINNAEUS, 1758)

(Plate 4, Figures 6, 6a)

1758. *Buccinum crenulatum* LINNAEUS (pars), Syst. Nat., ed. 10, p. 741, no. 416 [(ARGENVILLE, 1742, pl. 14, fig. Y and GUALTIERI, 1742, pl. 57, fig. L only) – non BRUGUIÈRE, 1789 = *Nassa* sp.]

1767. *Buccinum hecticum* LINNAEUS (pars), Syst. Nat., ed. 12, p. 1206, no. 482 [(non LINNAEUS, 1758) – SEBA, 1758, pl. 56, fig. 21 only]

1791. *Buccinum varicosum* GMELIN, Syst. Nat., ed. 13, p. 3505

1811. *Terebra maculata* PERRY, Conchology 5, pl. 16, fig. 2 (non *Buccinum maculatum* LINNAEUS, 1758)

1845. *Buccinum luteolum* "MARTYN," CHENU, Univ. Conch., p. 25, pl. 33, fig. 1a (smooth form)

1857. *Terebra fimbriata* DESHAYES, Journ. Conchyl., 6: 71, pl. 5, fig. 1 (smooth form)

1859. *Terebra interlineata* DESHAYES, Proc. Zool. Soc. London, p. 277, no. 8

1898. *Terebra crenulata* var. *booleyi* MELVILL & SYKES, Proc. Malac. Soc. London 3 (1): 42, pl. 3, fig. 5

Shell: Shell large, moderately heavy and evenly tapered; flesh-pink in colour, rarely pale fawn, ornamented with darker patches of flesh colour. Whorls with two equidistant rows of small evenly spaced brown dots. Whorls flat, numbering about 15 apart from protoconch of 3 nuclear whorls; early whorls axially plicate. Sutures with a series of prominent pointed white crenulations which at times become obsolete. Body whorl with 3 rows of evenly spaced brown dots, ultimate row disappearing into the pale flesh aperture. Columella pale flesh in colour, calloused, with a white ridge on the margins; raised undulating ridges cross columella, anterior canal straight.

Juvenile shells have prominent axial ribs on whorls, a punctate presutural spiral groove is evident and sutures are closely packed with nodules; the colour pattern is otherwise complete.

Animal: Foot light fawn, siphon creamy-white to pale flesh in colour; eyes black, situated on top of short creamy coloured eye stalks measuring about 5 mm in length.

Size: 15 to 120 mm.

Habitat: In clean sand, from 0 - 3 fathoms.

Moderately common.

Distribution: Throughout the Fiji Islands. – From the Red Sea through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: The species generally prefers sheltered areas with clean sand. Specimens from shore reefs are generally darker in colour than those from offshore areas.

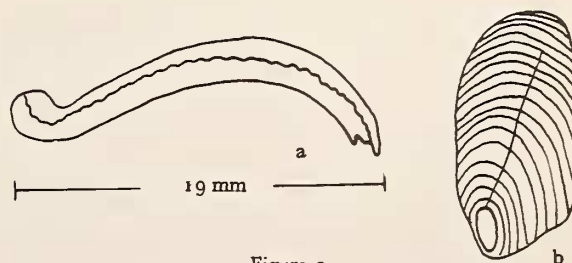


Figure 2

Terebra crenulata (LINNAEUS)

a – Penis

b – Operculum

A smooth form of *Terebra crenulata* occurs sporadically in all populations, and is not restricted to a certain geographical area. This individual variant has been described as *T. fimbriata* DESHAYES, 1857.

Terebra interlineata DESHAYES appears to be a variant with prominent and numerous axial ribs.

5. *Terebra (Oxymoris) felina* (DILLWYN, 1817)

(Plate 4, Figure 9)

1791. *Buccinum tigrinum* GMELIN, Syst. Nat., ed. 13, p. 3502 (non GMELIN, 1791, p. 3475)

1817. *Buccinum felinum* DILLWYN, Descr. cat. rec. shells, 2: 644, no. 135

1869. *Terebra suffusa* PEASE, Amer. Journ. Conch., 5:65

Shell: Shell moderate in size, slightly ventricose and smooth; silky-white, ornamented with a spiral row of brown spots on whorls posteriorly to sutures. Whorls smooth and flat, numbering 11 to 14 apart from protoconch of 2 nuclear whorls; presutural band broad, defined by a shallow spiral groove, becoming deeper and punctate on early whorls which are axially plicate. Body whorl with two rows of brown spots and obsolete spiral striae; columella white and straight, centrally ridged, interior of aperture white.

Size: 40 to 87 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. - From East Africa through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: In the majority of Hawaiian specimens the brown spots are almost obsolete (*vide* WEAVER, 1960), which is not the case in Fiji specimens.

6. *Terebra (Oxymoris) maculata* (LINNAEUS, 1758)

(Plate 4, Figure 1)

1758. *Buccinum maculatum* LINNAEUS (pars), Syst. Nat., ed. 10, p. 741, no. 415

1840. *Terebra maculosa* PFEIFFER, Krit. Reg. Conch. Gab., p. 41

1935. *Terebra (Subula) maculata* var. *confluens* DAUTZENBERG, Mém. Mus. Hist. Nat. Belg., 17 (2): 31

Shell: Shell large, broad and heavy; white or cream in colour, ornamented with two rows of axially oriented dark brown blotches on whorls; blotches anterior to the suture generally larger, occasionally merging to form large patches. Whorls smooth and flat, numbering about 19 apart from protoconch; early whorls axially plicate, last whorl with two rows of dark brown blotches, followed by

three rows of light brown or dark fawn squarish spots. Columella white, strongly plicate; aperture white, anterior canal straight.

Juvenile shells, 15 to 20 mm in length, have a completed colour pattern; whorls have a prominent subsutural groove, oblique axial ribs and coarsely crenulate sutures. Whorls number 10 apart from $2\frac{1}{2}$ glassy-white nuclear whorls; last whorl is axially plicate, ornamented with two pale whitish spiral bands.

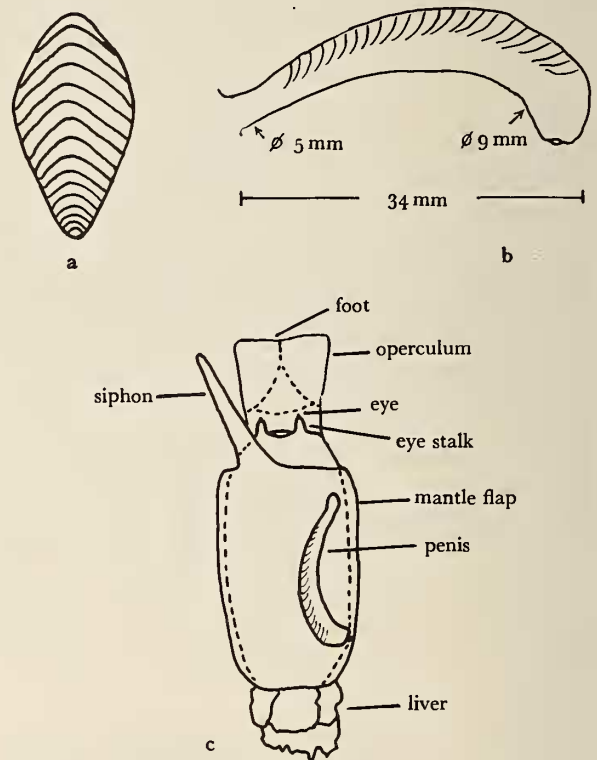


Figure 3

Terebra maculata (LINNAEUS)

a - Operculum b - Penis
c - Lateral view of anterior portion of animal

Animal: Sole and dorsum of foot light fawn, siphon creamy-white, eye-stalks light fawn, 4 - 6 mm in length and 2 - 3 mm in width; eyes greyish-black, situated on tips of eye-stalks, diameter of pupil 0.2 mm. Proboscis large, light yellow in colour and about 73 mm long and 11 mm wide, with a series of transverse annular muscles. Penis "scimitar-shaped" but rounded at distal end, smooth

on one side and with a series of ripples on the other.

Size: 15 to 200 mm

Habitat: In clean sand, from 0 - 5 fathoms.

Common.

Distribution: Throughout the Fiji Islands. – From the Red Sea through the tropical Indo-Pacific to Polynesia and Hawaii.

(*Subula*) SCHUMACHER, 1817

Type species: *Buccinum dimidiatum* LINNAEUS, 1758

= *Terebra dimidiata* (LINNAEUS, 1758)

7. *Terebra (Subula) areolata* (LINK, 1807)

(Plate 4, Figure 3)

1758. *Buccinum dimidiatum* LINNAEUS (pars), Syst. Nat., ed. 10, p. 742, no. 420 (SEBA, 1758, pl. 56, figs. 23, 24, 27)

1767. *Buccinum subulatum* LINNAEUS (pars), Syst. Nat., ed. 12, p. 1205, no. 480 (SEBA, 1758, pl. 56, fig. 16)

1807. *Vertagus areolatus* LINK, Besch. Nat.-Samml. Univ. Rostock, p. 128 (CHEMNITZ, 1780, pl. 154, fig. 1443)

1816. *Terebra subulata* LAMARCK, Tabl. Encycl. Méth., p. 3, pl. 402, figs. 2 a, 2 b (non *Buccinum subulatum* LINNAEUS, 1767)

1817. *Buccinum maculatum* var. DILLWYN, Descr. cat. rec. shells 2: 642 (non LINNAEUS, 1758)

Shell: Shell large and slender, slightly broadening towards body whorl; cream to fawn in colour, ornamented with three rows of blackish-brown squarish blotches on whorls, those posterior to the suture being the largest. Whorls flat, numbering about 20 apart from protoconch of two nuclear whorls; early whorls axially plicate. A presutural ledge is evident, giving the whorls a divided and slightly step-like appearance. Body whorl with four rows of evenly spaced squarish blotches, ultimate row disappearing into the pale fawn aperture; faint, extremely fine punctate spiral lines are superimposed over the pattern. Columella pale fawn, thin, with a high and rounded margin, anterior canal straight.

Size: 40 to 130 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Moderately common.

Distribution: Throughout the Fiji Islands. – From East Africa through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: The species superficially resembles *Terebra subulata* (LINNAEUS); the latter has shorter undivided whorls, which are roundly angulate at the sutures. There are only two rows of almost equal sized blotches on the whorls, and three rows on the body whorl.

8. *Terebra (Subula) argus argus* HINDS, 1844

(Plate 4, Figure 7)

1822. *Terebra muscaria* LAMARCK, Anim. sans Vert., 7: 285

1839. *Terebra nebulosa* KIENER, Spéc. Gen. Icon. Coq. Viv., p. 23, pl. 10, fig. 21 (non SOWERBY, 1825)

1844. *Terebra argus* HINDS, Proc. Zool. Soc. London, for 1843: 160

Shell: Shell moderate in size, slender and slightly broadening towards the body whorl; whitish to creamy-white in colour, ornamented with three rows of nebulous, yellow squarish spots; one row of spots is situated on the presutural band and two rows on the whorl. Whorls smooth, flat, only slightly rounded at sutures, numbering about 16 apart from protoconch; early whorls axially plicate, plicae becoming obsolete on the last two or three whorls. The presutural band is defined by a deeply punctate spiral groove. Body whorl with four rows of spots, ultimate row disappearing into the pale fawn aperture. Columella whitish, outer margin extended to form a sharp calloused area; anterior canal straight.

Size: 50 to 85 mm.

Habitat: In slightly muddy and silty sand, in shallow water.

Rare.

Distribution: South and West Viti Levu. – From the Philippine Islands through the tropical Pacific to Polynesia and Hawaii.

Discussion: *Terebra argus brachygyra* PILSBRY, 1921, which is endemic to the Hawaiian Islands, differs from the nominal species by having somewhat shorter whorls, deeper and crenulate sutures and distinct axial ribs.

9. *Terebra (Subula) dimidiata* (LINNAEUS, 1758)

(Plate 4, Figures 4, 4a)

1758. *Buccinum dimidiatum* LINNAEUS (pars), Syst. Nat., ed. 10, p. 742, no. 420 (SEBA, 1758, pl. 59, fig. 19 only)

1811. *Terebra carnea* PERRY, Conchology, 5, pl. 16, fig. 1

1845. *Buccinum vittatum* "MARTYN," CHENU, Univ. Conch., p. 26, pl. 88, fig. 2 (non LINNAEUS, 1767)

1857. *Terebra splendens* DESHAYES, Journ. Conchyl., 6: 73, pl. 5, fig. 11

1902. *Terebra chlorata* MARTENS, Rumph. Ged., p. 120 (non LAMARCK, 1822)

1935. *Terebra (Subula) dimidiata* var. *circumvoluta* DAUTZENBERG, Mém. Mus. Hist. Nat. Belg. 2 (17): 22, pl. 1, fig. 4

1935. *Terebra (Subula) dimidiata* var. *pallida* DAUTZENBERG, Mém. Mus. Hist. Nat. Belg. 2 (17): p. 23 (non DESHAYES, 1857)

Shell: Shell large and smooth; light orange to orange-red in colour, ornamented with irregular, often "Y"-shaped white lines and streaks. Whorls smooth, flat and shining,

numbering about 20 apart from protoconch; early whorls longitudinally plicate. Presutural band defined by a prominent spiral groove. Body whorl with two narrow white bands and wavy axial streaks; faint punctate lines encircle the body whorl and generally exceed 18 in number. Columella white with a raised rounded cord on the outer margin; anterior canal straight.

Juvenile shells are axially ribbed, presutural groove is deeply punctate and the sutures are crenulate; the colour pattern is complete.

Animal: The foot is light chestnut-brown, siphon creamy-white, eye-stalks light chestnut brown, eyes black.

Size: 20 to 125 mm.

Habitat: In clean and muddy sand, from 0 to 10 fathoms. Common.

Distribution: Throughout the Fiji Islands. – From East Africa through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: Specimens collected on shore reefs are generally darker in colour than those taken from offshore areas.

The description of *Buccinum dimidiatum* LINNAEUS in the 10th edition of the "Systema Naturae" (1758) contains five words which could be applied to several species, and no figure had been cited. In the 12th edition of the same work the description was repeated and five figures from SEBA were cited (1758, pl. 56, figs. 16, 19, 23, 24, 27); four of these figures represent *Terebra areolata* (LINK), while only figure 19 is a questionable representation of the *T. dimidiata* of DILLWYN (1817) and of subsequent authors. Figure 15 on the same plate in SEBA (*op. cit.*) is a good illustration for the *T. dimidiata* of authors, yet had not been cited by LINNAEUS. We are faced with a five-word description in both editions of the "Systema Naturae," four figures cited which represent *T. areolata*, while only one cited figure could possibly refer to *T. dimidiata*. The non-citation of good figures of *T. dimidiata* of authors by LINNAEUS strongly suggests that the *T. dimidiata* of LINNAEUS was in fact the species *T. areolata* of (LINK).

DAUTZENBERG (1935) committed a curious error when describing *Terebra dimidiata* var. *pallida*, which he based on two figures in CHEMNITZ (1780, 4, pl. 154, figs. 1817, 1818). On page 31 (*op. cit.*) the same CHEMNITZ figures were placed in the synonymy of *T. muscaria* LAMARCK (= *T. areolata*). These figures are the "*Buccinum hecticum linnaei*" of CHEMNITZ and represent the *T. dimidiata* of authors, not *T. areolata* (LINK).

(*Abretiella*) BARTSCH, 1923

Type species: *Terebra cerithina* LAMARCK, 1822

10. *Terebra (Abretiella) cerithina* LAMARCK, 1822

(Plate 5, Figure 24)

1822. *Terebra cerithina* LAMARCK, Anim. sans Vert., 7: 288

1844. *Terebra pulchra* HINDS, Proc. Zool. Soc. London for 1843: 151 (juvenile)

1921. *Terebra spaldingi* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 308-309

Shell: Shell moderate in size, solid, slightly ventricose; flesh-pink or bluish-white in colour, ornamented with whitish or fawn coloured wavy axial lines and a fawn



Figure 4

Operculum of *Terebra cerithina* LAMARCK

spiral band on whorls. Whorls flat, numbering about 14 to 15 apart from protoconch of 3 nuclear whorls; axial ribs number about 23, but are generally obsolete on the last three whorls. Presutural band defined by a punctured spiral groove. Body whorl with two fawn transverse bands and a narrow fawn line placed in between. Columella pink-flesh in colour, straight, with a raised and calloused area which joins outer lip at periphery; aperture flesh-white.

Small and juvenile specimens are ventricose, creamy-white in colour, sculptured with numerous axial riblets on all whorls. The axial ribs are interrupted by a deep presutural groove, intercostal spaces faintly stained with fawn, but all other pattern is absent.

Animal: Foot is creamy-tan in colour, siphon creamy-white; eyes black, situated on summits of short creamy coloured eye-stalks.

Size: 17 to 70 mm.

Habitat: In clean, slightly muddy and silty sand, from 0 to 5 fathoms.

Moderately common.

Distribution: Throughout the Fiji Islands. – Western Pacific Ocean to Polynesia and Hawaii.

(*Decorihastula*) OYAMA, 1961

Type species: *Terebra affinis* GRAY, 1834

11. *Terebra (Decorihastula) affinis* GRAY, 1834

(Plate 5, Figure 26)

1832. *Terebra striata* QUOY & GAIMARD, Voy. Astrol., p. 468, pl. 36, figs. 23, 24 (non BASTEROT, 1825)

1834. *Terebra affinis* GRAY, Proc. Zool. Soc. London, p. 60

1839. *Terebra pertusa* KIENER (pars), Spéc. Gen. Coq. Viv., pl. 11, fig. 24b (non *Buccinum pertusum* BORN, 1780)

Shell: Shell moderately small, slender, solid and shiny; creamy-white in colour, ornamented with longitudinal bluish-brown blotches and almost obsolete narrow transverse bands. Whorls flat to slightly convex, numbering about 13 to 15, apart from protoconch of three nuclear whorls; whorls sculptured with closely-packed axially



Figure 5

Operculum of *Terebra affinis* GRAY

curved and slightly convex ribs which bisect the whitish presutural band at an angle; axial ribs numbering about 18 to 22 on the penultimate whorl. On the late whorls axial ribs are flat, and intercostal spaces contain about 8 punctured grooves; on the early whorls axial ribs become slightly wider spaced and interstices are sculptured with short transverse grooves. Presutural band defined by a punctured spiral groove; interstices of axial ribs stained with brown. Body whorl with a pale brown transverse band and a white peripheral band; region near the anterior canal light brown. Columella fawn in colour, straight, with a sharp cord joining the apertural lip; aperture creamy-white or light fawn.

Animal: Foot light creamy-tan in colour, siphon and eye-stalks white, eyes black; eye-stalks measure 0.9 mm to

1.3 mm in height, and eyes are situated on the summit of the eye-stalks.

Size: 15 to 60 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Common.

Distribution: Throughout the Fiji Islands. - From East Africa through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: Occasional specimens show faint and almost obsolete spiral cords on whorls.

12. *Terebra (Decorihastula) columellaris* HINDS, 1844

(Plate 5, Figure 28)

1844. *Terebra columellaris* HINDS, Proc. Zool. Soc. London for 1843: 151

1850. *Terebra areolata* ADAMS & REEVE, Voy. Samarang, p. 30, pt. 4, pl. 10, fig. 23 (non *Vertagus areolatus* LINK, 1807)

1869. *Terebra propinqua* PEASE, Amer. Journ. Conch., 5: 66

Shell: Shell small and moderately slender; whitish in colour, flecked with irregular orange blotches. Whorls flat to slightly convex, numbering from 15 to 17, apart from protoconch of 3 nuclear whorls; sculpture consisting of elevated curved and rounded axial ribs numbering from 18 to 26 on the penultimate whorl. Presutural band defined by a spiral groove separating the whorls from a single row of white beads at the sutures; intercostal spaces with 6 to 13 short and deep spiral grooves which occasionally extend onto the walls of the axial ribs. Body whorl axially plicate, with a white peripheral band generally bordered by a thin orange spiral line; ultimate half of body whorl spirally striate and orange-brown in colour. Columella yellowish-white or pale orange, straight, with a plicate fold interiorly and a thin cord on the exterior; aperture light orange-brown with a white median band.

Size: 18 to 43 mm.

Habitat: In clean and slightly muddy sand, from 0 - 3 fathoms.

Uncommon.

Distribution: South and West Viti Levu. - From the Philippine Islands through the tropical Pacific to Polynesia and Hawaii.

Discussion: *Terebra undulata* GRAY is similar to this species but differs in being more ventricose, fawn to pale brown in colour throughout and lacking the blotches and white peripheral band, besides having fewer axial ribs.

13. *Terebra (Decorihastula) conspersa* HINDS, 1844

(Plate 4, Figure 12)

1844. *Terebra conspersa* HINDS, Proc. Zool. Soc. London for 1843: 153

Shell: Shell moderately small, heavy, broadening towards the aperture; cream to light fawn in colour, ornamented with interrupted spiral bands of brown axial streaks which become obsolete in some specimens and may only be visible at the sutures. Whorls slightly convex, numbering from 13 to 15, apart from protoconch; presutural band defined by a punctate spiral groove. Whorls sculptured with fine curved axial ribs, numbering from 23 to 55 on the penultimate whorl; intercostal spaces with 4 to 7 spiral grooves which faintly override axial ribs. Body whorl axially plicate and spirally grooved, with a broad dark tan peripheral band which enters the aperture; columella streaked with cream and tan, centrally ribbed, corded and almost straight.

Animal: The foot and siphon are rose-coloured and finely veined with white; eyes black, situated on the summits of short creamy-fawn eye-stalks; proboscis thin and long (10 mm), distal end coloured grey.

Size: 14 to 45 mm.

Habitat: In clean sand, from 0 - 5 fathoms.

Moderately common.

Distribution: Throughout the Fiji Islands. - From the Philippine Islands to Fiji.

Discussion: The species is very variable in colouring and density of axial ribs. In specimens where the interrupted



Figure 6

Operculum of *Terebra conspersa* HINDS

brown spiral bands are absent, the intercostal spaces at the sutures are stained a dark brown. Fine-ribbed variants of the species have more than twice as many axial ribs on the whorl than coarse-ribbed forms.

14. *Terebra (Decorihastula) flavofasciata* PILSBRY, 1921

(Plate 6, Figure 35)

1921. *Terebra flavofasciata* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 306

Shell: Shell small and moderately slender; white or dirty-white in colour, ornamented with a faint orange-brown narrow transverse line on whorls, presutural groove irregularly stained with orange-brown. Whorls slightly convex, numbering about 15, apart from protoconch of $2\frac{1}{2}$ rose-coloured nuclear whorls; sculpture consists of elevated moderately curved and rounded strong axial ribs, numbering about 19 on the penultimate whorl. Presutural band defined by a moderately deep spiral groove, which appears as deep pits in the interstices; some of these pits are occasionally stained with orange-brown; intercostal spaces with 7 - 8 short and moderately deep spiral grooves. Body whorl axially plicate with a narrow orange peripheral line, ultimate third and occasional intercostal space stained light orange-brown; columella creamy-white, straight, with an angulate cord exteriorly.

Animal: Foot light creamy-fawn, siphon vivid red, eye-stalks small, eyes black and situated just beneath the tip of the stalks.

Size: 27 mm.

Habitat: Dredged from 15 fathoms on clean sand substrate.

Distribution: West off Viti Levu. - Hawaii, New Guinea.

Discussion: This species which previously has been reported as endemic to the Hawaiian Islands, appears to have a Pacific Ocean distribution. The species *Terebra pumilio* (E. A. SMITH, 1873) may possibly be the same species.

15. *Terebra (Decorihastula) kilburni* R. D. BURCH, 1965

(Plate 6, Figures 32, 32a)

1965. *Terebra (Decorihastula) kilburni* R. D. BURCH, The Veliger, 7 (4): 249 - 250; pl. 31, fig. 8

Shell: Shell moderately small and slender; ivory-white in colour, ornamented with irregular reddish-brown blotches which appear darker in the intercostal spaces. Whorls slightly convex, numbering from 15 to 20, apart from protoconch of $2\frac{1}{2}$ to 3 violet or amber-coloured nuclear whorls; presutural band defined by an almost obsolete punctate spiral groove. Sculpture consists of close-set straight or only slightly curved rounded whitish axial ribs

numbering from 19 to 21 on the penultimate whorl; axial ribs become generally lighter in colour towards the sutures. Intercoastal spaces with 7 to 15 spiral lirae which extend halfway up the walls of the axial ribs. Body whorl with an ill-defined white transverse band, ultimate third of whorl reddish-brown; the body whorl has 17 to 19 intercoastal lirae and 4 to 6 fine peripheral spiral cords. Columella light tan in colour, corded at edges and centrally undulate; anterior canal recurved.

Size: 14 to 38 mm.

Habitat: In clean sand, often in sand-pockets of coral reefs, from 0 to 5 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. – New Guinea, Queensland.

Discussion: The co-ordinates of Wading Island, the type locality, were erroneously stated as Lat. 17° 45' S and Longitude 177° 25' E in the original description. This should be emended to Lat. 17° 49' 20" S and Long. 177° 09' 30" E.

We have seen specimens of this species from Pearl Reef, Great Barrier Reef, Queensland (leg. D. Macpherson, collection Cernohorsky).

Paratype no. 17 of *Terebra kilburni* BURCH, collected at Lomalagi by the senior author and measuring 16.3 mm in length, has been deposited at the British Museum (Nat. Hist.), where it bears the Museum registry no. 1965141.

16. *Terebra (Decorihastula) nebulosa* SOWERBY, 1825

(Plate 5, Figure 27)

1825. *Terebra nebulosa* SOWERBY, Tank. Cat., App. p. 25

Shell: Shell moderate in size, slightly broadening towards aperture; ivory-white in colour, ornamented with moderately large irregular orange-red or carmine blotches. Whorls flat to slightly convex, numbering from 17 to 22 apart from protoconch; presutural band defined by a punctate spiral groove, with the deep pits in the intercoastal spaces stained orange-red. Sculpture consists of moderately broad curved and somewhat rounded axial ribs, which become perpendicular on the presutural band and number from 18 to 26 on the penultimate whorl. Intercoastal spaces with moderately shallow spiral grooves, numbering from 10 to 15 per whorl; grooves on early whorls just about extend to the summits, but on the last 3 to 4 whorls they override the axial ribs. Body whorl with orange-red irregular blotches and a narrow peripheral line of the same colour followed by a narrow white zone and spiral striae and an ultimate broad pinkish-tan transverse band which enters the aperture. Columella pinkish-tan or rose-red, slightly recurved,

corded, and centrally striate; interior of aperture orange-tan.

Size: 26 to 73 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands – From South Africa through the tropical Indo-Pacific to Polynesia and the Hawaiian Islands.

Discussion: In some specimens the base colour is reddish-orange and the blotches appear white, in others the pattern is reversed.

17. *Terebra (Decorihastula) paucistriata* (E. A. SMITH, 1873)

(Plate 5, Figures 31, 31 a)

1873. *Myurella paucistriata* E. A. SMITH, Ann. Mag. Nat. Hist., 11 (4): 269

Shell: Shell small, slender and glossy, light yellowish-orange in colour. Whorls slightly convex, numbering from 16 to 17 apart from protoconch of 3½ nuclear whorls; the presutural band is defined by a moderately deep spiral groove, forming a double row of white beads at the sutures. The row of beads posteriorly to the sutures is coarse and well defined while the anterior row is weak and indicated by being white. Sculpture consists of elevated coarse and sharply angulate whitish axial ribs numbering from 10 to 12 on the penultimate whorl; axial ribs only slightly curved on the last two whorls but straight, obliquely oriented and contiguous on earlier whorls. Intercoastal spaces deep and "V"-shaped, stained with yellowish-orange and with 3 to 8 transverse grooves which do not quite extend to the summits of the axial ribs. Body whorl somewhat angulate with 4 to 5 spiral grooves on its ultimate third and with a distinct white peripheral band. Columella straight, white and corded; interior of aperture whitish at the margin, fawn to orange in the interior.

Size: 18 to 32 mm.

Habitat: In clean sand, from 0 to 2 fathoms.

Moderately rare.

Distribution: Throughout the Fiji Islands. – ?

Discussion: *Terebra paucistriata* differs from *T. undulata* GRAY in colouring, by being more slender in shape, with angulate body whorl, deep intercoastal spaces, and a white peripheral band which is absent in *T. undulata*. *Terebra paucistriata* differs from *T. (Decorihastula)* species in the latter having a shallower presutural groove, more numerous and curved axial ribs and intercoastal grooves, a

rounded body whorl and is lacking the sheen of *T. paucistriata*.

The holotype is preserved in the British Museum (Nat. Hist.) where it bears the number B.M.N.H.1856.11.3.17, and measures 18.5 mm in length; it was dredged by J. McGillivray in 5 fathoms in sand at Ovalau Island, Fiji (S. P. Dance, *in litt.*).

18. *Terebra (Decorihastula) pertusa* (BORN, 1780)

(Plate 4, Figures 11, 11 a)

1780. *Buccinum pertusum* BORN, Mus. Caes. Vindob., p. 267, pl. 10, fig. 13
 1829. *Terebra undata* BLAINVILLE, Dict. Sci. Nat., p. 35
 1857. *Terebra bermonti* LORIS, Journ. Conchyl., p. 389, pl. 12, fig. 2
 1898. *Terebra andamanica* MELVILL & SYKES, Proc. Malacol. Soc. London, 3 (1): 41, pl. 3, fig. 3
 1903. *Terebra loisiae* E. A. SMITH, Proc. Malacol. Soc. London, 5 (6): 360, pl. 15, fig. 1

Shell: Shell moderately large, fairly solid; light or dark orange or yellow, ornamented with irregular curved white axial streaks and a narrow transverse band alternating in dark reddish-brown and white streaks at the sutures. Whorls almost flat and straight, numbering from 16 to 19 apart from protoconch; presutural band defined by a shallow spiral groove which is pitted between axial ribs anteriorly to the suture. Sculpture consists of weakly defined curved and angulate axial ribs which bisect the presutural band at an angle; axial ribs number from 25 to 35 on the penultimate whorl. Intercoastal spaces with 2 to 5 spiral grooves which almost reach the summits of the axial ribs. Body whorl with 8 to 9 intercoastal lirae followed by 3 to 4 spiral cords and a faint white peripheral band. Columella creamy-tan or orange, corded on the inner margin with a prominent cord extending from the centre to the outer edge of the canal.

Size: 30 to 70 mm.

Habitat: In clean and slightly muddy sand, from 0-3 fathoms.

Rare.

Distribution: South and West Viti Levu. - From the Red Sea through the tropical Indo-Pacific to the Hawaiian Islands.

Discussion: This species generally lives on clean sand substrate, however, it has also been dredged from Akuilau Island in Nadi Bay; this island is subject to occasional inundation of muddy water from nearby river deltas.

Terebra andamanica MELVILL & SYKES has been compared with *T. pertusa* (BORN) by the authors but was specifically separated on the basis of being broader with more convex whorls (not apparent in figure), more ele-

vated longitudinal sculpture, more prominent infrasutural band and irregular spotting in which the spots are farther apart. All these features may be observed within even a short series of *T. pertusa*. *Terebra loisiae* SMITH appears to be a small damaged and bleached specimen of *T. pertusa* (BORN).

19. *Terebra (Decorihastula) undulata* GRAY, 1834

(Plate 5, Figure 29)

1834. *Terebra undulata* GRAY, Proc. Zool. Soc. London, p. 61
 1839. *Terebra pertusa* KIENER (pars), Spéc. Gen. Icon. Coq. Viv., pl. 11, fig. 24 c (non *Buccinum pertusum* BORN, 1780)
 1859. *Terebra approximata* DESHAYES, Proc. Zool. Soc. London, p. 299, no. 125
 1913. *Terebra undulata* var. *laevior* SCHEPMAN, Siboga Exp. Toxog., p. 372, no. 21, pl. 25, fig. 9

Shell: Shell moderately small, slightly ventricose; fawn or light brown in colour, intercoastal spaces stained dark brown. Whorls flat or slightly convex, numbering from 12 to 18, apart from protoconch; presutural band defined by a punctured spiral groove which bisects axial ribs to form a single row of axially oriented white beads. Sculpture consisting of curved, rounded lighter-coloured axial ribs numbering from 13 to 20 on the penultimate whorl. Intercoastal spaces with from 4 to 10 deep spiral grooves which extend onto the walls of the axial ribs. Body whorl axially plicate, with 5 to 10 shallow spiral striae anteriorly to the siphonal canal. Columella flesh to light tan in



Figure 7

Operculum of *Terebra undulata* GRAY

colour, slightly recurved with a thin brown cord on the inner margin; interior of aperture tan in colour.

Size: 15 to 60 mm.

Habitat: In clean and slightly muddy sand, from 0-2 fathoms.

Moderately uncommon.

Distribution: Throughout the Fiji Islands. – From the Philippine Islands through the tropical Pacific to Polynesia and Hawaii.

20. *Terebra (Decorihastula)* species

(Plate 5, Figure 30)

Shell: Shell small and slender; light orange to orange-brown in colour, intercostal spaces stained dark orange. Whorls slightly convex, numbering from 14 to 17, apart



Figure 8

Operculum of *Terebra (Decorihastula)* species

from protoconch of 3 nuclear whorls; presutural band defined by a shallow punctured spiral groove. Sculpture consists of curved and slightly angulate axial ribs numbering from 13 to 21 on the penultimate whorl; the white presutural band may be narrow or slightly broader forming a single or double row of small beads at the sutures. Intercostal spaces with from 5 to 11 deep spiral grooves which extend onto the walls of the axial ribs. Body whorl axially plicate with a narrow white peripheral band and from 5 to 9 subsequent spiral cords; ultimate third of body whorl pale orange. Columella long and straight, flesh or pale orange, plicate interiorly and corded exteriorly; aperture elongate, interior pale orange with a white median band.

Size: 17 to 37 mm.

Habitat: In clean sand, from 0 - 5 fathoms.

Uncommon.

Distribution: South and West Viti Levu. – From the Philippine Islands to Fiji.

Discussion: The species differs from *Terebra undulata* GRAY in being more slender, orange-brown in colour, and having more numerous and finer axial ribs and transverse grooves, and being ornamented with a white peripheral line on the body whorl. It differs from *T. columellaris* HINDS in colour pattern and in having slightly longer whorls with fewer axial ribs and a longer columella and aperture.

This species has been reported as *Terebra paucistriata* (E. A. SMITH) from Fiji by CATE & BURCH (1964).

(*Perirhoe*) DALL, 1908

Type species: *Terebra circumcincta* DESHAYES, 1857.

21. *Terebra (Perirhoe) amanda* HINDS, 1844

(Plate 5, Figure 17)

1844. *Terebra amanda* HINDS, Proc. Zool. Soc. London for 1843: p. 154

Shell: Shell moderately small and slender; fawn to light brown in colour and shining. Whorls flat to slightly concave, numbering from 14 to 18, apart from protoconch of $2\frac{1}{2}$ to $3\frac{1}{2}$ light fawn nuclear whorls; presutural band defined by a deep spiral groove which is often punctate, the spiral groove separating two rows of distinct squarish and slightly concave sutural beads. Sculpture consists of 3 to 4 spiral rows of deep punctures on the whorls, pittings numbering about 30 on the penultimate whorl. Body whorl with a double row of beads, followed by 3 to 4 spiral punctations and 5 to 8 spiral grooves which enter the aperture. Columella cream in colour, calloused, plicate and rounded; interior of aperture light fawn, anterior canal recurved.

Size: 25 to 46 mm.

Habitat: In clean sand, from 0 - 15 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. – From the Philippine Islands to Fiji and the Hawaiian Islands.

Discussion: The two rows of sutural beads are of equal size on the early whorls, but the anterior row of beads becomes slightly smaller towards the aperture.

22. *Terebra (Perirhoe) anilis* (RÖDING, 1798)

(Plate 5, Figure 15)

1791. *Buccinum strigilatum* GMELIN (pars), Syst. Nat., ed. 13, p. 3501 (non LINNAEUS, 1758)

1798. *Epitonium anile* RÖDING, Mus. Bolten., p. 95

1798. *Epitonium cancellatum* RÖDING, Mus. Bolten., p. 95

1822. *Terebra myuros* LAMARCK, Anim. sans Vert., 7: 289

1843. *Terebra scabrella* DESHAYES & MILNE-EDWARDS, Anim. sans Vert., 2nd. ed., 10: 247

1857. *Terebra acuta* DESHAYES, Journ. Conchyl., 6: 100, pl. 4, figs. 4, 5

1857. *Terebra circinata* DESHAYES, Journ. Conchyl., 6: 99, pl. 4, figs. 6, 7

Shell: Shell small and slender; light to dark tan in colour throughout. Whorls concave, numbering from 18 to 20, apart from protoconch of $1\frac{1}{2}$ nuclear whorls; presutural

band defined by a deep spiral groove separating two rows of oblique and slightly angulate beads, with the anterior row always the larger. Sculpture consists of curved, broad and slightly angulate axial ribs, numbering about 21 on the penultimate whorl; axial ribs fairly straight on the first four postnuclear whorls. Whorls encircled with from 4 to 7 spiral grooves, grooves bisecting axial ribs to give the whorls a beaded effect. Body whorl axially plicate, spirally striate, and with a peripheral row of small beads. Columella light tan in colour, flat and recurved, corded on margins; interior of aperture light tan.

Size: 30 to 45 mm.

Habitat: In clean sand, from 10 - 15 fathoms.

Moderately rare.

Distribution: South and West Viti Levu. - From the Philippine Islands to Fiji and Samoa.

Discussion: We have examined specimens of the species from Asau and Apia harbours, Samoa (*leg.* T. Jackson), which hardly differed from Fiji specimens.

This species has been reported as *Terebra cumingi* DES-HAYES, from Fiji by J. CATE & BURCH (1964).

23. *Terebra (Perirhoe) babylonia* LAMARCK, 1822

(Plate 5, Figure 25)

1791. *Buccinum acus* GMELIN, Syst. Nat., ed. 13, p. 3502 (*nomen oblitum*)

1822. *Terebra babylonia* LAMARCK, Anim. sans Vert., 7: 287

1834. *Terebra striata* GRAY, Proc. Zool. Soc. London, p. 60 (*non* BASTEROT, 1825; *nec* QUOY & GAIMARD, 1832)

1838. *Terebra babylonica* POTIEZ & MICHAUD, Gal. de Donai, 1: p. 393

Shell: Shell moderately small and slender; flesh in colour, ornamented with orange-brown axial growth striae and spiral grooves. Whorls flat or only slightly convex, numbering about 19, apart from protoconch of 2 nuclear



Figure 9

Operculum of *Terebra babylonia* LAMARCK

whorls; presutural band defined by a deep smooth spiral groove. Sculpture consists of 2 moderately deep and smooth spiral grooves and dark flesh or orange-brown

curved axial striae which bisect the presutural band to form one or two rows of light-coloured longitudinally oriented indistinct oblong beads; beads are arranged in a double row on early whorls and become generally reduced to only one row of obsolete beads on the last three whorls. Body whorl with 2 to 3 spiral grooves anteriorly to the sutures and a broad dark flesh or orange-brown spiral band on the ultimate half of the whorl; the coloured band contains five spiral striae. Columella flesh-brown in colour, plicate at outer margin and with a flat calloused area which joins lip at suture; anterior canal recurved, interior of aperture flesh-brown.

Juvenile shells have two rows of beads on all whorls and an additional row of beads on the body whorl.

Size: 15 to 76 mm.

Habitat: In clean sand, from 0 - 3 fathoms.

Moderately common.

Distribution: Throughout the Fiji Islands. - From the Red Sea through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: The species was figured but not formally named by LAMARCK in 1816 (pl. 402, fig. 5).

24. *Terebra (Perirhoe) cingulifera* LAMARCK, 1822

(Plate 5, Figures 18, 18a)

1822. *Terebra cingulifera* LAMARCK, Anim. sans Vert., 7: 289

1825. *Terebra punctulata* SOWERBY, Tank. cat., App. p. 24

1834. *Terebra punctatostriata* GRAY, Proc. Zool. Soc. London, p. 61

1859. *Terebra chinensis* DESHAYES, Proc. Zool. Soc. London, p. 309, no. 189

1859. *Terebra columnaris* DESHAYES, Proc. Zool. Soc. London, p. 310, no. 195

Shell: Shell moderate in size, slender and smooth; pale flesh to light tan in colour, presutural band occasionally lighter in colour. Whorls slightly concave or flat, rarely slightly convex, numbering from 15 to 20, apart from protoconch of 3 glassy nuclear whorls; presutural band defined by a moderately deep spiral groove, which may be either smooth or punctate. Sculpture consists of from 2 to 7 shallow punctate spiral lines and curved almost obsolete axial growth striae; these growth axials are more pronounced in some individuals than in others. Early whorls concave, with more pronounced spiral grooves and a double row of beads at sutures. Body whorl with numerous punctate spiral lines which become close-set towards the siphonal canal; columella pinkish-white, straight or slightly recurved, with a single raised cord; interior of aperture flesh coloured.

Size: 27 to 75 mm.

Habitat: In clean sand, from 0 - 5 fathoms.

Moderately uncommon.

Distribution: Throughout the Fiji Islands. - From Mauritius through the tropical Indo-Pacific to Samoa.

Discussion: The species is variable in colouring and form of whorls. The post-sutural roll is distinct in some specimens but almost flat in others. While end-members of a population may appear specifically separable, intergradation is obvious in a long series of specimens.

25. *Terebra (Perirhoe) funiculata* HINDS, 1844

(Plate 5, Figure 22)

1844. *Terebra funiculata* HINDS, Proc. Zool. Soc. London for 1843: 153

1859. *Terebra archimedis* DESHAYES, Proc. Zool. Soc. London, p. 314

Shell: Shell small and slender; dirty-white to creamy-fawn in colour. Whorls slightly concave, numbering from 17 to 19, apart from protoconch of 3 glassy nuclear whorls; presutural band is divided into two strong spiral cords by a deep transverse groove; the posterior presutural cord is traversed by a shallow spiral groove forming a smaller additional satellite cord. Whorls with generally two spiral grooves and axially curved growth lines; all grooves are stained with orange or orange-brown. Body whorl with 2 rounded presutural cords, followed by 2 to 3 spiral grooves; columella white, with a thin brown cord. Anterior canal prominently recurved, interior of aperture white.

Size: 15 to 32 mm.

Habitat: In clean, slightly muddy and silty sand, from 0 to 5 fathoms.

Uncommon.

Distribution: South and West Viti Levu. - From the Philippine Islands through the tropical Pacific to Polynesia and Hawaii.

Discussion: *Terebra funiculata* HINDS appears to occur in isolated and widely separated colonies in Fiji, and is generally not found in exposed areas.

26. *Terebra (Perirhoe) laevigata* GRAY, 1834

(Plate 5, Figure 21)

1834. *Terebra laevigata* GRAY, Proc. Zool. Soc. London, p. 61

1964. *Terebra (Perirhoe) archimedis* (sic) DESHAYES, J. CATE & BURCH, The Veliger 6 (3): 146 (non *Terebra archimedis* DESHAYES, 1859)

Shell: Shell moderately small and slender; creamy-white to light fawn in colour throughout. Whorls flat to slightly

concave, numbering from 19 to 26, apart from protoconch of 1½ nuclear whorls; presutural band defined by a moderately deep spiral groove, separating two distinct spiral cords at the sutures; the anterior cord becomes appreciably smaller and sometimes even obsolete on the whorls towards the aperture. Sculpture consists of from 3 to 8 extremely fine spiral striae, which are generally more pronounced in larger specimens, and numerous axially curved growth lines. Body whorl with 10 to 15 fine spiral striae; columella whitish, smooth, but occasionally with a raised plication, corded on the exterior; interior of aperture light cream.

Size: 27 to 50 mm.

Habitat: In clean and muddy sand, from 0 to 10 fathoms.

Moderately uncommon.

Distribution: Throughout the Fiji Islands - From South Africa through the tropical Indo-Pacific to Fiji.

27. *Terebra (Perirhoe) langfordi* PILSBRY, 1921

(Plate 5, Figure 23)

1921. *Terebra langfordi* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 303

1921. *Terebra langfordi angustior* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 304

Shell: Shell moderately small, heavy and slender; fawn to yellowish-brown in colour throughout. Whorls flat, shouldered below suture, numbering from 15 to 18, apart from protoconch; presutural band defined by a deeply incised punctate spiral groove, separating two distinct rounded spiral cords; the posterior spiral cord is slightly more prominent and is traversed by a fine punctate transverse groove. Whorls with 4 distinct spiral grooves and numerous fine axially curved growth striae which give the intervening grooves a cancellate appearance. Body whorl with five somewhat flattened spiral cords, the fifth peripheral cord slightly more pronounced, followed by 7 to 10 finer spirals. Columella white, recurved, corded on either side, with a shining white calloused area near aperture; interior of aperture whitish.

Size: 30 to 40 mm.

Habitat: In clean sand and soft weed substrate, from 3 to 5 fathoms.

Rare.

Distribution: Namotu Islands, West off Viti Levu. - Hawaiian Islands.

Discussion: This species has been believed to be endemic to the Hawaiian Islands, and the Fiji record appears to be the first outside this region.

Terebra funiculata HINDS superficially resembles this species, but the former is more fragile, has a lighter-col-

oured shell, with only two spiral grooves on whorls, and the body whorl bears only 2 to 3 spiral cords which are following the four main cords.

28. *Terebra (Perirhoe) montgomeryi* R. D. BURCH, 1965
(Plate 5, Figure 20)

1965. *Terebra (Dimidacus) montgomeryi* R. D. BURCH, *The Veliger*, 7 (4): 250-251, pl. 31, fig. 7 (Type locality: Guam, Mariana Islands)

Shell: Shell moderate in size, slender and smooth; orange-brown in colour, ornamented with moderately large irregular and axially curved white flammules. Whorls flat, numbering 18, apart from protoconch, which is eroded; presutural band defined by a shallow punctate spiral groove. Sculpture consists of 4 spiral rows of deep punctures and curved axial growth lines which become close-set and ill-defined weak axial ribs at the presutural band; these axials number about 47 on the penultimate whorl. Body whorl with 4 spiral rows of deep punctures, followed by 8 to 10 spiral grooves, some of which are punctate. Columella whitish, twisted, and with a single cord; interior of aperture light orange-fawn.

Size: 50.5 mm.

Habitat: In clean sand, in shallow water.

Very rare.

Distribution: Mamanuca group, West off Viti Levu. - Guam.

Discussion: The species resembles *Terebra cingulifera* LAMARCK but differs in colour pattern, having a shallow presutural groove, spiral rows of disconnected punctures, and not continuous punctate spiral grooves as in *T. cingulifera*.

The holotype has been described from Guam by R. D. BURCH (1965), and the hypotype no. 1 was stated to have come from "Natadola Island." This hypotype, however, has been collected by the junior author 100 yards off the eastern sector of Namotu Island in the Mamanuca group.

29. *Terebra (Perirhoe) pallida* DESHAYES, 1857

(Plate 5, Figure 19)

1857. *Terebra pallida* DESHAYES, *Journ. Conchyl.*, 6: 87, pl. 4, fig. 3

1931. *Perirhoe exulta* IREDALE, *Rec. Austral. Mus.*, 18: 224, pl. 25, fig. 3

Shell: Shell large and slender, slightly ventricose; reddish-brown to dark tan in colour throughout. Whorls convexly

rounded, numbering 20 to 26, apart from protoconch; presutural band defined by a narrow smooth spiral groove which bisects narrow, obliquely oriented axial ribs; ribs are short, almost obsolete, and confined to the presutural band. Sculpture consists of narrow moderately deep smooth spiral grooves, numbering from 4 to 8 on the penultimate whorl; early whorls with a double row of rounded nodules at the sutures. Body whorl with 14 to 19 fine spiral grooves, grooves somewhat obsolete in central area of body whorl; columella tan in colour, recurved, corded on either side, with a prominent angulate cord extending from the outer edge of the anterior canal; the columella forms a calloused area on the body whorl.

Size: 70 to 102 mm.

Habitat: In clean sand, from 0 - 5 fathoms.

Uncommon.

Distribution: West and South Viti Levu. - Australia, Polynesia.

Discussion: This species has on occasions been associated with *Terebra cingulifera* LAMARCK, but differs from that species in being much larger in size, orange-brown in colour, ventricose, with subulate convexly-rounded whorls and smooth spiral grooves.

30. *Terebra (Perirhoe) succinea* HINDS, 1844

(Plate 4, Figure 10)

1844. *Terebra succinea* HINDS, *Proc. Zool. Soc. London for 1843*: p. 149

1844. *Terebra succinea* HINDS in SOWERBY, *Thes. Conch.*, p. 151, pl. 42, fig. 40

Shell: Shell moderate in size, salmon-pink or orange-brown in colour, ornamented with two rows of small wide-spaced dark brown spots on whorls. Whorls flattened numbering 16, apart from protoconch, which is eroded. Sculpture consists of 4 to 10 weakly defined punctate spiral grooves or ridges and fine, close-set and arcuate growth-striae; presutural band defined by a moderately shallow spiral groove which is generally lighter in colour. Body whorl with three rows of small brown spots, ultimate row entering aperture. Columella salmon-pink in colour, with a weak columellar fold and a sharp cord on the exterior.

Size: 73 to 78 mm.

Habitat: In clean sand, in shallow water.

Rare.

Distribution: South and West Viti Levu. - Guam.

Discussion: Only three live-collected specimens are known to have been taken in Fiji waters (*leg.* M. Freitag and K. Mijts). Three specimens of this species have been recently recorded from Guam (R. D. BURCH, *in litt.*).

31. *Terebra* (*Perirhoe*) species

(Plate 5, Figure 16)

1964. *Terebra* (*Perirhoe*) *anilis* (RÖDING), J. CATE & BURCH, The Veliger 6 (3): 146 (non *Epitonium anilis* RÖDING, 1798)

Shell: Shell moderate in size, slender; dark tan in colour throughout. Whorls flat, becoming concave on early whorls numbering from 21 to 24, apart from a glassy-white protoconch; presutural band defined by a deep smooth spiral groove which separates a double row of blunt oblique beads; the row of beads posterior to the sutures always appreciably the larger, beads becoming obsolete on the ultimate three whorls in large specimens. Sculpture consists of 4 to 6 fine smooth spiral grooves and a single slightly raised cord just posterior to the sutures; grooves are bisected by fine axially curved growth striae, giving the whorls a cancellate appearance. On the first 8 to 10 whorls the double rows of beads are of equal size. Body whorl with 4 spiral grooves, one raised peripheral flattish spiral cord which is followed by 7 to 10 spiral striae. Columella light tan in colour, recurved, corded on inner margin and forming a light tan calloused area on body whorl; aperture rounded, light tan interiorly. Size: 36 to 55 mm.

Habitat: In clean sand, from 0 - 15 fathoms.

Moderately rare.

Distribution: Throughout the Fiji Islands. – ?

Discussion: The species differs from *Terebra cingulifera* LAMARCK in being dark tan in colour, with more numerous whorls and a more recurved columella and smooth spiral grooves; the sutures are nodulose and the body whorl is less rounded and slightly angulate. It differs from *T. pallida* DESHAYES in being appreciably smaller, and not subulate, and having flat whorls and beaded sutures.

The species has been collected in several Fijian localities, and all specimens exhibit common diagnostic features. The species does not appear to exceed 55 mm, with the majority of specimens ranging from 40 to 45 mm in length.

(*Strioterebrum*) SACCO, 1891

Type species: *Terebra basteroti* NYST, 1843 (fossil species).

32. *Terebra* (*Strioterebrum*) *exigua* DESHAYES, 1859

(Plate 6, Figure 38)

1859. *Terebra exigua* DESHAYES, Proc. Zool. Soc. London, p. 301
1944. *Terebra textilis* TOMLIN, Journ. Conch., 22 (5): 106 (non HINDS, 1844)

Shell: Shell very small and slender; brownish-fawn in colour with a light fawn presutural band. Whorls moderately convex, numbering from 15 to 17, apart from protoconch of $3\frac{1}{2}$ glassy light violet nuclear whorls; presutural band defined by a spiral groove which is shallow on the apex of the axial ribs but deep in interstices and stained a darker fawn. Sculpture consists of elevated, curved and angulate axial ribs numbering from 15 to 16 on the penultimate whorl. Intercoastal spaces with flattened spiral cords number from 3 to 4 on the presutural band and from 7 to 8 on the body whorl; cords extend to the summits of the axial ribs, area between cords microscopically transversely striate. Body whorl axially plicate and with 23 to 27 spiral striae; columella light brownish-fawn, moderately recurved, plicated interiorly, corded on outer margin, and with a pronounced elevated calloused area extending onto the body whorl; interior of aperture dark fawn.

Size: 24 to 28 mm.

Habitat: In clean sand, from 10 - 15 fathoms.

Rare.

Distribution: Momi Bay, West Viti Levu. – From New Guinea to Fiji.

33. *Terebra* (*Strioterebrum*) *fenestrata* HINDS, 1844

(Plate 6, Figure 37)

1844. *Terebra fenestrata* HINDS, Proc. Zool. Soc. London for 1843: p. 153

1844. *Terebra fenestrata* HINDS in SOWERBY, Thes. Conch., p. 176, pl. 44, fig. 86

Shell: Shell small and moderately slender; cream to fawn in colour, occasionally with a few yellowish axial streaks. Whorls straight to slightly concave, numbering 17, apart from protoconch of $3\frac{1}{2}$ white nuclear whorls. Sculpture consists of angulate and slightly curved axial ribs, numbering 22 on the penultimate whorl; sutures with two rows of beads which are separated by a deep presutural groove; in the interior row the beads are axially oriented oblique nodules and larger than the posterior row which consists of round angulate beads; on early whorls beads are equal in size. Interstices of axial ribs with about 4 elevated spiral ridges which override axial ribs to form small beads on the ribs; the interspaces of the main spiral ridges are very finely spirally striate. Body whorl axially ribbed and spirally ridged; columella creamy-white, prominently plicate, with a sharp thin cord extending to the anterior canal. Siphonal canal prominently recurved, twisted and tapered to a point.

Size: 28 to 32 mm.

Habitat: Unknown. Known from collection of dead specimens only.

Distribution: South Viti Levu. - ?

34. *Terebra (Strioterebrum) flavescens* DESHAYES, 1859

(Plate 6, Figure 34)

1859. *Terebra flavescens* DESHAYES, Proc. Zool. Soc. London, p. 299, no. 122

Shell: Shell small, moderately heavy and slender; light tan to brown in colour throughout. Whorls moderately convex, numbering from 13 to 16, apart from protoconch of 3 glassy violet nuclear whorls; presutural band defined by a deep spiral groove, sutures deep and with a noticeable presutural roll. Sculpture consists of curved and rounded axial ribs which extend onto the presutural band to form oblique, longitudinally oriented narrow beads; axial ribs number from 20 to 23 on the penultimate whorl. Intercoastal spaces broad with 8 to 9 elevated spiral cords which extend to the summits of the ribs; in certain individuals spiral cords override axial ribs, making these appear finely beaded; cords interrupted by a somewhat broad presutural groove, but 3 to 4 cords continue on the sutural nodules. Body whorl axially plicate, with

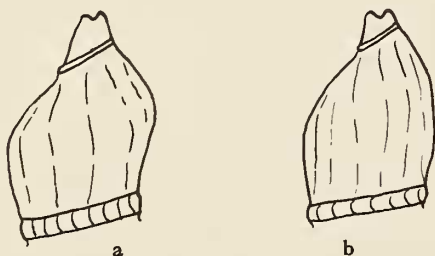


Figure 10

a - Lateral view of body whorl of *Terebra succincta* (GMELIN)

b - Lateral view of body whorl of *Terebra flavescens* DESHAYES

15 to 17 transverse cords in intercoastal spaces; columella creamy-tan to dark brown, concave, undulate slightly recurved and corded on either side, a calloused elevated area extends onto body whorl, interior of aperture light brown.

Size: 30 to 45 mm.

Habitat: In clean sand, from 3 to 5 fathoms.

Moderately rare.

Distribution: South and West Viti Levu. - Australia.

Discussion: The species is similar to *Terebra succincta* (GMELIN) but differs in being tan in colour, with a deep presutural groove, rounded axial ribs and more elevated longer intercoastal grooves; the aperture is distinctly laminated in adult specimens and the body whorl lacks the bulbous appearance of *T. succincta*.

35. *Terebra (Strioterebrum) succincta* (GMELIN, 1791)

(Plate 6, Figure 35)

1791. *Buccinum succinctum* GMELIN, Syst. Nat., ed. 13, p. 3502

1798. *Epitonium fissum* RÖDING, Mus. Bolten., p. 95

1807. *Vertagus succinctus* LINK, Besch. Nat.-Samml. Univ. Ros-tock, p. 129

1832. *Terebra cancellata* QUOY & GAIMARD, Voy. Astrol, 2: 471, pl. 36, figs. 27, 28 (non *Epitonium cancellatum* RÖDING, 1798)

1859. *Terebra undatella* DESHAYES, Proc. Zool. Soc. London for 1843: 300, no. 129

Shell: Shell moderately small, slender and heavy; dark brown to almost black in colour throughout. Whorls convex, numbering from 14 to 17, apart from protoconch of 2 nuclear whorls; presutural band defined by a moderately deep spiral groove. Sculpture consists of curved slightly angulate axial ribs, numbering from 20 to 28 on the penultimate whorl, ribs bisecting presutural band at an angle. Intercoastal spaces with broad transverse ridges, numbering from 6 to 11 and almost reaching the summits of the axial ribs. Body whorl bulbous, axially plicate, with numerous spiral cords which override axial ribs towards the columella and terminate at the columellar cord. Columella dark brown, straight or recurved, plicate interiorly and strongly corded exteriorly; aperture elongate, dark brown within.

Size: 16 to 38 mm.

Habitat: In soft muddy sand, in shallow water.

Common in the West of Viti Levu, uncommon elsewhere.

Distribution: Throughout the Fiji Islands. - From the Philippine Islands through the tropical Pacific to Fiji and the Hawaiian Islands.

Discussion: The species occurs in widely separated colonies in Fiji, due to the preferential soft muddy sand environment; it is conspicuously rare in the North-east of Viti Levu.

Terebra cancellata QUOY & GAIMARD is a secondary homonym of *Epitonium cancellatum* RÖDING, 1798 (= *E. anilis* RÖDING, 1798). *Terebra cancellata* QUOY & GAIMARD is congeneric with *T. anilis* (RÖDING), and both are placed in the genus *Terebra* s. str. by almost all writers.

Buccinum succinctum GMELIN and *Epitonium fissum* were both based on a delineation in CHEMNITZ (1780,

vol. 4, pl. 154, fig. 1451) which represents the species *Terebra cancellata* QUOY & GAIMARD. The species has been figured by WOOD (1828, pl. 24, fig. 144) as *B. succinctum* GMELIN.

36. *Terebra (Strioterebrum) textilis* HINDS, 1844

(Plate 6, Figure 36)

1844. *Terebra textilis* HINDS, Proc. Zool. Soc. London for 1843: p. 156

Shell: Shell small and slender; creamy-white to light yellow in colour throughout, occasionally stained with light orange in intercostal spaces. Whorls convex, numbering from 12 to 18, apart from protoconch of $3\frac{1}{2}$ to 4 glassy, light violet nuclear whorls; presutural band defined by a moderately deep spiral groove. Sculpture consists of slightly curved angulate axial ribs, numbering from 16 to 22 on the penultimate whorl. Intercostal spaces with fine



Figure 11

Operculum of *Terebra textilis* HINDS

elevated spiral cords numbering from 5 to 16, cords almost reaching the summits of the axial ribs; the intercostal spaces deeply pitted on the presutural groove. Body whorl axially plicate, with 20 to 30 spiral striae overriding axial ribs towards the aperture; columella cream in colour, slightly recurved, centrally plicate, with a rounded cord on the inner margin and a prominent cord extending from the centre of the columella to the outer margin of the siphonal canal; columella extends as a slightly raised calloused area onto the body whorl, interior of aperture creamy-white.

Size: 14 to 40 mm.

Habitat: In clean and slightly muddy sand, from 0 - 5 fathoms.

Moderately uncommon.

Distribution: Throughout the Fiji Islands. - Through the tropical Indo-Pacific to Polynesia and the Hawaiian Islands; not reported from the Philippine region.

37. *Terebra (Strioterebrum) turrita* (E. A. SMITH, 1873)

(Plate 6, Figures 40, 40a, 40b)

1873. *Myurella turrita* E. A. SMITH, Ann. Mag. Nat. Hist., 11 (4): p. 266

1964. *Terebra polygyrata* DESHAYES, J. CATE & BURCH, The Veliger, 6 (3): 147 (non DESHAYES, 1859)

Shell: Shell very small, narrow, and slender; brown in colour with a white presutural band. Whorls short and shouldered; slightly convex, numbering from 15 to 18, apart from protoconch; presutural band defined by a deep spiral groove bisecting axial ribs to form angulate longitudinally-oriented white nodules. Sculpture consists of slightly curved elevated and angulate axial ribs, numbering from 15 to 21 on the penultimate whorl. Intercostal spaces with from 4 to 6 slightly elevated fine spiral cords which override the ribs to make them appear finely beaded; an additional 3 to 6 spiral cords are situated between the sutural nodules and either barely reach or override nodules. Body whorl axially plicate, with from 12 to 16 fine spiral cords; the body whorl is brown in colour with a moderately broad, white peripheral band. Columella light grey, tan or brownish-mauve, slightly recurved and centrally grooved, extending onto the body whorl as a slightly raised calloused area.

Size: 15 to 23 mm.

Habitat: In clean sand, from 10 - 15 fathoms.

Rare.

Distribution: Momi Bay, West off Viti Levu. - ?

Discussion: The holotype, Cuming collection, is in the British Museum (Nat. Hist.) where it bears the number B.M.N.H. 1965137, and measures 23 mm in length (S. P. Dance, *in litt.*). SMITH (1873, p. 266) gives the length as 26 mm; the holotype is a dead, bleached specimen.

(*Clathroterebra*) OYAMA, 1961

Type species: *Terebra fortunei* DESHAYES, 1857.

38. *Terebra (Clathroterebra) fijiensis*
(E. A. SMITH, 1873)

(Plate 6, Figure 42)

1873. *Myurella fijiensis* E. A. SMITH, Ann. Mag. Nat. Hist., 11 (4): p. 266

Shell: The species has been described by SMITH as follows: Shell small, subulate, shining white, whorls centrally weakly and obscurely banded with brown; whorls flattened, axial ribs moderately strong, oblique and slightly arcuate (on body whorl 13, gradually becoming obsolete towards the base), regular, transversely elegantly

corded (with 8 cords and 16 on body whorl); presutural zone not prominent; aperture small; columella almost straight, siphonal canal short.

Size: length, 21 mm; width, 4 mm

Habitat: In sand and mud, in 12 fathoms (S.P.Dance, *in litt.*).

Type locality: Ovalau Island, Fiji Islands (*leg. J. McGillivray*).

Discussion: SMITH (op. cit.) remarked that the chief characteristics of this species are the regularity of the spiral sulci, about eight in each whorl and double that number in the last, and the obscurity of the infrasutural spiral groove, which is only to be detected in the upper whorls and consists of a series of elongate punctures between the longitudinal ribs. The faint brownish band around the middle of the whorls is probably somewhat faded.

This species is unknown in recent collections; it is not the *Terebra fijiensis* SMITH, as of BURCH (1965) from Fiji. The holotype is in the British Museum (Nat. Hist.), where it bears the number B.M.N.H. 1856.10.27.8, and measures 19.8 mm (S.P.Dance, *in litt.*); it has obviously been dredged dead.

39. *Terebra (Clathroterebra) multistriata*
SCHEPMAN, 1913

(Plate 6, Figure 39)

1913. *Terebra multistriata* SCHEPMAN, Siboga Exp., pt. 5, p. 371, pl. 25, fig. 8

Shell: Shell small and moderately slender; cream to light fawn in colour with a brown or dark yellow presutural band. Whorls short and convex, numbering from 16 to 17, apart from protoconch of 3 white, glassy nuclear whorls; presutural groove absent, but a rusty-brown or dark yellow presutural band is evident. Sculpture consists of elevated curved and moderately angulate axial ribs, numbering from 13 to 18 on the penultimate whorl; intercostal spaces with 10 to 15 fine elevated transverse ridges which extend to the apex of the axial ribs, making these appear finely beaded; space between the transverse ridges microscopically spirally striate. Body whorl axially plicate, ribs extending as far as the anterior canal, with numerous intercostal striae numbering from 25 to 40; a broad brownish peripheral band is visible on the body whorl. Columella white, slightly recurved, centrally grooved and corded exteriorly; a white calloused area extends onto the body whorl.

Size: 17 to 25 mm.

Habitat: Known from dead shells only, dredged from 10 to 15 fathoms.

Rare.

Distribution: Momi Bay, West off Viti Levu. – ?

40. *Terebra (Clathroterebra)* species

(Plate 6, Figure 41)

Shell: Shell very small, slightly broadening towards aperture; creamy-white in colour, with a violet columella and aperture. Whorls convex, numbering about 13, apart from protoconch of 3 glassy purplish whorls; presutural band defined by a spiral groove which is weak and shallow on the apex of the axial ribs but deeply punctate in intercostal spaces. Sculpture consists of curved and sharply angulate axial ribs, numbering about 14 on the penultimate whorl; intercostal spaces with 12 to 15 spiral grooves, with 4 of these grooves situated on the presutural band, remainder on whorl; spiral grooves become almost obsolete on early whorls. Body whorl with about 25 spiral lirae, half of these terminating inside of aperture; ultimate third of body whorl violet. Columella violet in colour, centrally concave, corded on either side of margin, exterior cord prominent; interior of aperture violet.

Size: 20 mm.

Habitat: Unknown. Dead specimen dredged from 10 to 15 fathoms on clean sand substrate.

Rare.

Distribution: Southwest Viti Levu. – ?

Discussion: The colour of live-collected specimens may differ somewhat from the well-preserved but dead-collected specimen from Fiji.

This species has been reported as *Terebra violascens* HINDS, by J. CATE & BURCH (1964) from Fiji; however, HINDS' type-figure differs appreciably from the Fiji specimen.

(*Triplostephanus*) DALL, 1908

Type species: *Terebra triseriata* GRAY, 1834

41. *Terebra (Triplostephanus) jenningsi* R.D.BURCH, 1965

(Plate 4, Figures 13, 13 a)

1965. *Terebra (Triplostephanus) jenningsi* R. BURCH, *The Veliger*, 7 (4): 248 - 249, pl. 31, fig. 9

Shell: Shell medium in size, very slender and long; orange-yellow or light flesh in colour with a white presutural band. Whorls flat to concave, numbering from 25 to 30,

apart from protoconch of $2\frac{1}{2}$ white opaque nuclear whorls; presutural band defined by a white rounded cord at sutures. Whorls with 5 to 7 fine, lightly incised spiral grooves which are occasionally obsoletely punctate, and numerous protraxially curved growth striae; early whorls light tan in colour, concave, with two rows of small crenules which become progressively obsolete towards the aperture; sutural crenules hardly visible on the last 3



Figure 12

Operculum of *Terebra jenningsi* R. BURCH

whorls in large specimens, whereas the crenules may be visible on the periphery of the body whorl in smaller specimens. Body whorl angulate, occasionally with a peripheral cord and 5 to 7 spiral lirae in between the sutures and cord; an additional 9 to 11 lirae are visible near the periphery of the body whorl and terminate near the calloused area of the columella. Columella creamy-flesh in colour, concave, strongly corded on interior margin and with a calloused area extending from siphonal canal to the upper centre of the columella; anterior canal sharply recurved, aperture ovate, interior creamy-white.

Animal: Foot cylindrical and narrow, truncated and broadening anteriorly, becoming roundly pointed posteriorly. Foot creamy-white or yellow, siphon simple and light yellow, becoming bright yellow at distal end; eye-stalks short and slender rounded at the tips, with black eyes placed only a short distance away from summits. Operculum narrowly-elongate, translucent orange-yellow. Size: 40 to 80 mm.

Habitat: In clean sand, often in sand-pockets of coral reefs, from 0 to 5 fathoms.

Moderately rare.

Distribution: Throughout the Fiji Islands. – From Malaysia to the Philippine Islands and Fiji.

Discussion: The species is sympatric with *Terebra triseriata* GRAY in two Fijian localities (Manava Island and

Suva Reef). It resembles *T. triseriata* only superficially, and differs in colour, sculpture and number of whorls.

In the original description of *Terebra jenningsi* (BURCH, 1965), certain data have been erroneously transcribed and a correction is in order. The coordinates of Namotu Island, the type locality, are Lat. $17^{\circ} 50' 45''$ S and Long. $177^{\circ} 12' 30''$ E. In table 5 (op. cit., p. 249), the holotype is shown as originating from Natadola; however, it has been collected at Namotu Island. Paratypes 4 to 6 have been collected at Manava Island, North Viti Levu, by the senior author, while paratype 9 should have been shown as collected at Nadi Bay. Paratype 10 has been collected at Viti Levu Bay, North-east Viti Levu.

Paratype no. 5 of *Terebra jenningsi*, collected at Manava Island by the senior author, and measuring 47.8 mm in length, has been deposited in the British Museum (Nat. Hist.), where it bears the register number 1965143.

42. *Terebra (Triplosthephanus) triseriata* GRAY, 1834

(Plate 4, Figure 14)

1834. *Terebra triseriata* GRAY, Proc. Zool. Soc. London, p. 62

Shell: Shell moderate in size, very slender; dark fawn to chestnut-brown in colour throughout. Whorls flattened to slightly concave, numbering from 32 to 41, apart from protoconch which is usually missing; presutural band defined by a deep smooth spiral groove which separates two rows of crenules at the sutures; in some specimens the posterior row of nodules is the larger of the two. Sculpture consists of 4 to 6 prominent spiral cords of varying width and faint arcuate growth lines or axial grooves; on some specimens the spiral cords are beaded. Body whorl angulate, spirally corded, peripheral cord very prominent and beaded, ultimate third of body whorl spirally striate. Columella orange-brown or fawn in colour, calloused and plicate; siphonal canal recurved.

Size: 80 to 100 mm.

Habitat: In clean sand, from 0 to 7 fathoms.

Rare.

Distribution: North and South Viti Levu. – From the Philippine Islands through the tropical Pacific to Polynesia.

Duplicaria DALL, 1908

Type species: *Buccinum duplicatum* LINNAEUS, 1758
= *Duplicaria duplicata* (LINNAEUS)

*Duplicaria s. str.*43. *Duplicaria (Duplicaria)* species

(Plate 6, Figure 44)

1964. *Duplicaria australis* (E. A. SMITH), J. CATE & BURCH, The Veliger 6 (3): 145 (non *Terebra australis* E. A. SMITH, 1873).
 1965. *Duplicaria concolor* (E. A. SMITH), R. BURCH, The Veliger, 7 (4): 251 (non *Terebra concolor* E. A. SMITH, 1873)

Shell: Shell small, moderately slender and shiny; cream to light fawn in colour ornamented with small irregular brown blotches and a narrow interrupted brown transverse band on whorls. Whorls convex, numbering about 16, apart from protoconch of 4 glassy violet nuclear whorls; presutural band defined by a deep and continuous spiral groove. Sculpture consists of broad, angulate, slightly curved and oblique axial ribs, numbering about 18 on the penultimate whorl; intercostal spaces smooth, faintly stained with orange-brown, early whorls coloured purple. Body whorl with a narrow white peripheral band, axial ribs becoming obsolete at this point; ultimate third of body whorl tan in colour and smooth. Columella white, centrally concave and corded, prominent outer cord joins margin at anterior canal which is slightly recurved; aperture elongate, whitish within.

Size: 34 mm.

Habitat: In clean sand, from 10 - 15 fathoms.

Rare.

Distribution: Mamanuca Group, West off Viti Levu. - ?

Discussion: This species is known from only one live-collected specimen which in colour, sculpture (smooth interstices) and size does not correspond with any known description. Collection of further material may help to establish the identity of this species.

44. *Duplicaria (Duplicaria) raphanula* (LAMARCK, 1822)

(Plate 6, Figure 46)

1822. *Terebra raphanula* LAMARCK, Anim. sans Vert., 7: 288
 1909. *Terebra caledonica* SOWERBY, Proc. Malacol. Soc. London, 8 (4): 198, text fig.

Shell: Shell moderate in size, slender and solid; shining white or creamy-white in colour, ornamented with two spiral rows of orange or orange-brown blotches, those anterior to the sutures being the smaller. Whorls slightly convex, numbering from 10 to 13, apart from protoconch of 1½ to 2 white nuclear whorls; presutural band defined by a deep, obsolete punctate spiral groove. Sculpture consists of close-set and angulate axial ribs, numbering from 25 to 30 on the penultimate whorl; intercostal spaces smooth and concave, presutural band sparsely streaked with orange-brown. Body whorl with two narrow white transverse bands and three ill-defined transverse rows of orange blotches, ultimate row disappearing into aperture. Columella creamy-white, occasionally stained with orange, fairly broad, corded on inner margin, and with a prominent cord extending from columella to outer edge of the anterior canal; anterior canal straight, interior of aperture dark fawn or light orange-brown.

Size: 40 to 60 mm.

Habitat: In clean sand, in shallow water.

Rare.

Distribution: Southwest Viti Levu. - From South Africa through the tropical Indo-Pacific to Japan and the Fiji Islands.

45. *Duplicaria (Duplicaria) tiurensis* (SCHEPMAN, 1913)

(Plate 6, Figure 43)

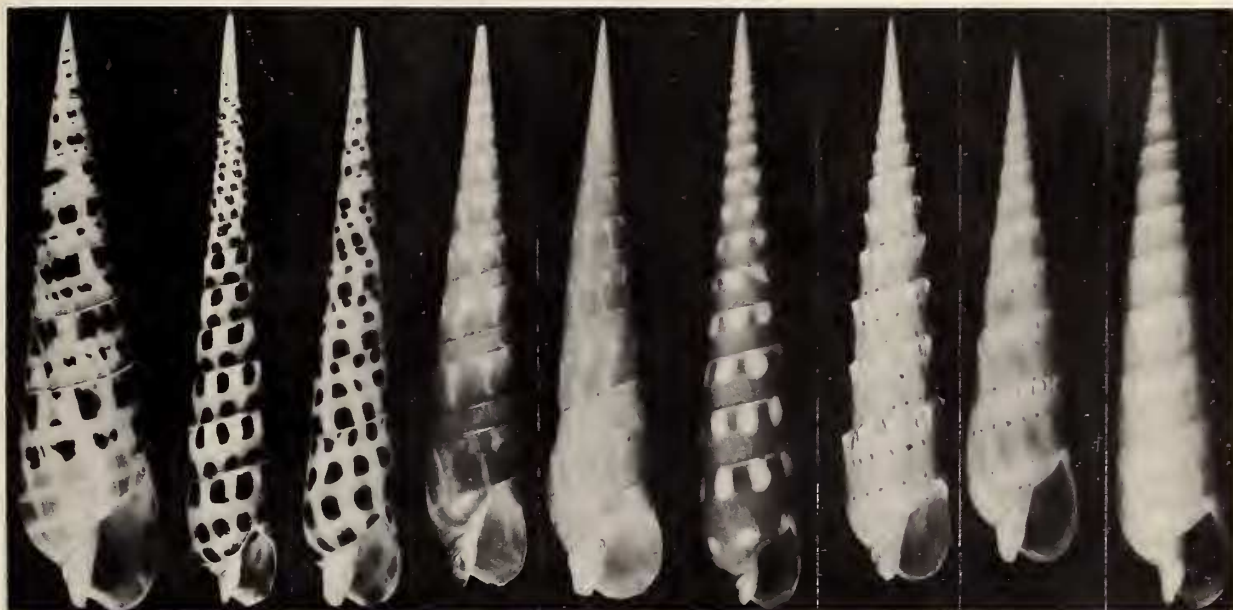
1913. *Terebra tiurensis* SCHEPMAN, Siboga Exp., Pt. 5, p. 374, pl. 25, fig. 10

Shell: Shell very small and fragile, slightly broadening towards aperture. Creamy-white in colour, ornamented with irregular chestnut-brown zones, axial streaks and spots. Whorls convex, numbering 12, apart from protoconch of 4 pinkish nuclear whorls; presutural band defined by a deep and narrow spiral groove. Sculpture consists of narrow, angulate and straight axial ribs, numbering about 21 on the penultimate whorl; the presutural groove forms small and narrow longitudinally oriented nodules at the sutures. Intercostal spaces with 4 to 5

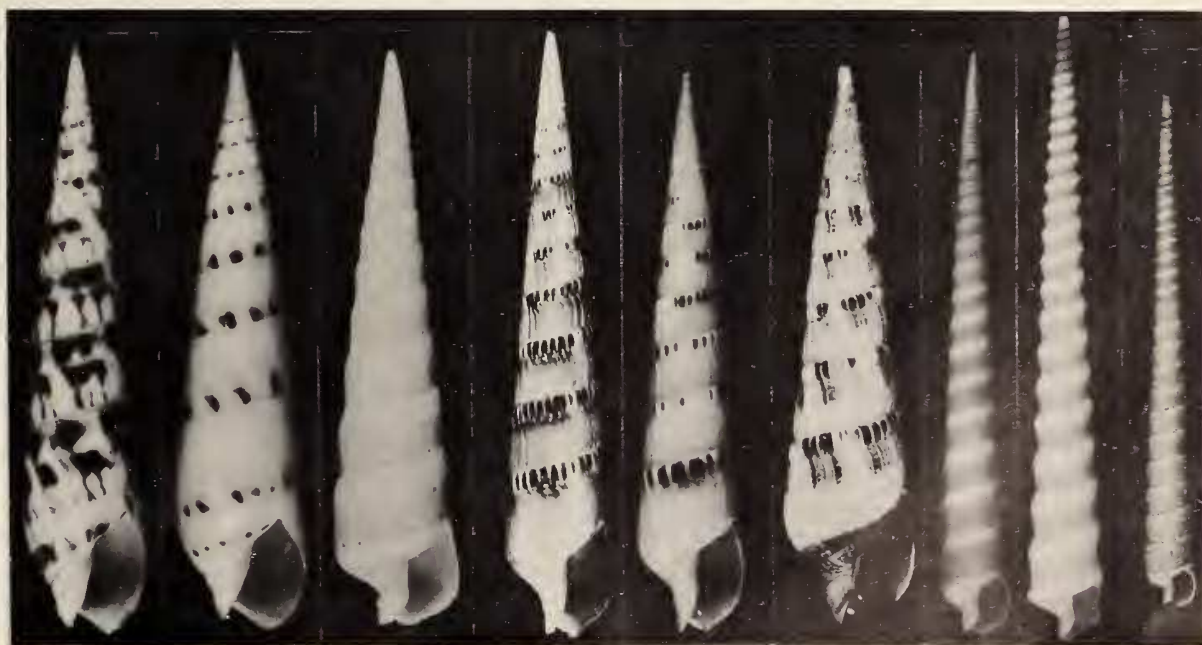
Explanation of Plate 4

- Figure 1: *Terebra maculata* (LINNAEUS). Fiji. x 0.5
 Figure 2: *Terebra subulata* (LINNAEUS). Fiji. x 0.7
 Figure 3: *Terebra areolata* (LINK). Fiji. x 0.7
 Figure 4: *Terebra dimidiata* (LINNAEUS). Fiji. x 0.7
 Figure 4 a: *Terebra dimidiata* (LINNAEUS), variant. Fiji. x 0.7
 Figure 5: *Terebra guttata* (RÖDING). Fiji. x 0.8
 Figure 6: *Terebra crenulata* (LINNAEUS). Fiji. x 0.75
 Figure 6 a: *T. crenulata* (LINNAEUS), smooth form. Fiji. x 0.8
 Figure 7: *Terebra argus* HINDS. Fiji. x 1.0.

- Figure 8: *Terebra chlorata* LAMARCK. Fiji. x 1.2
 Figure 9: *Terebra felina* (DILLWYN). Fiji. x 1.2
 Figure 10: *Terebra succinea* HINDS. Fiji. x 1.0
 Figure 11: *Terebra pertusa* (BORN). Fiji. x 1.25
 Figure 11 a: *T. pertusa* (BORN), coarse-ribbed form. Fiji. x 1.3
 Figure 12: *Terebra conspersa* HINDS. Fiji. x 2.0
 Figure 13: *Terebra jenningsi* R. BURCH. Fiji. x 1.0
 Figure 13 a: *T. jenningsi* R. BURCH, juvenile specimen. Fiji. x 1.75
 Figure 14: *Terebra triseriata* GRAY. Fiji. x 0.8



1 2 3 4 4a 5 6 6a 7



8 9 10 11 11a 12 13 13a 14

very fine spiral striae. Body whorl slightly angulate, axially plicate, axial ribs becoming obsolete towards the anterior canal; a narrow whitish peripheral band encircles the body whorl, ultimate third of whorl light tan in colour. Columella creamy-white, concave, with a single cord extending towards the siphonal canal which is recurved; interior of aperture creamy-white.

Size: 18.7 mm.

Habitat: In clean sand, from 10 - 15 fathoms.

Rare.

Distribution: Momi Bay, West Viti Levu. - South Africa.

Discussion: The species is known from only one specimen and further material is needed to confirm the actual occurrence in Fiji.

Hastula H. & A. ADAMS, 1853

Type species: *Hastula concinna* (DILLWYN, 1817)

= *H. strigilata* (LINNAEUS, 1758)

46. *Hastula alba* (MENKE, 1843)

(Plate 7, Figures 56, 56a)

1843. *Terebra alba* MENKE, Mollusc. Nov. Holl., p. 30
 1844. *Terebra casta* HINDS, Proc. Zool. Soc. London for 1843: 156
 1859. *Terebra incolor* DESHAYES, Proc. Zool. Soc. London, p. 283
 1859. *Terebra bipartita* DESHAYES, Proc. Zool. Soc. London, p. 284
 1859. *Terebra philippiana* DESHAYES, Proc. Zool. Soc. London, p. 289
 1860. *Terebra aciculina* REEVE (pars), Conch. Icon., pl. 23, fig. 121a (non LAMARCK, 1822)
 1903. *Hastula casta natalensis* E. A. SMITH, Proc. Malacol. Soc. London, 5 (6): 360
 1921. *Terebra medipacifica* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 308, pl. 12, figs. 8, 9, 10
 1921. *Terebra medipacifica melior* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 308, pl. 12, fig. 11

Shell: Shell small, slender and shiny; white or cream in colour throughout, occasionally ornamented with reddish-brown axial streaks and transverse bands. Whorls flat to slightly convex, numbering from 9 to 12, apart from protoconch of $3\frac{1}{2}$ to $4\frac{1}{2}$ glassy, reddish-brown or violet nuclear whorls; a presutural groove is absent. Sculpture consists of close-set rounded and oblique axial ribs, which are generally well defined near the sutures but obsolete on remainder of whorl; axial ribs number from 18 to 27 on the penultimate whorl, and rare individuals are axially ribbed from suture to suture. Body whorl axially plicate near suture but smooth on remainder of whorl, plain white or cream in colour, sometimes axially streaked with reddish-brown zones which are separated by a narrow white peripheral band. Columella centrally concave, corded on inner margin and with a fine cord extending

from the centre of the columella to the anterior canal; anterior canal thickened and straight, aperture elongate-ovate.

Size: 18 to 33 mm.

Habitat: In clean and silty sand, occasionally on weedy substrate, from 0 to 2 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. - From Mauritius through the tropical Indo-Pacific to Polynesia and the Hawaiian Islands.

Discussion: Specimens collected at Wading Island, Mamanuca group, are white or creamy-white throughout; those from Nadi Bay are dark and ornamented with reddish-brown. At Lomalagi, South Viti Levu, both forms occur in about equal numbers.

Terebra alba MENKE has priority over *T. casta* HINDS, since the Proceedings of the Zoological Society of London for 1843 were not published until 1844.

47. *Hastula cernohorskyi* R. BURCH, 1965

(Plate 7, Figure 48)

1965. *Hastula (Punctoterebra) cernohorskyi* R. BURCH, The Veliger, 7 (4): 244 - 245, pl. 31, fig. 3

Shell: Shell moderate in size, heavy and moderately broad. Uniformly brown or olive-green in colour throughout, with an indistinct narrow flesh-coloured presutural band. Whorls flat to slightly convex, numbering from 9 to 14, apart from a very broad protoconch of 2 to $2\frac{1}{2}$ glassy purplish nuclear whorls; presutural band defined by a spiral row of punctures in the interstices of the axial ribs. Sculpture consists of numerous close-set rounded axial ribs which become progressively shorter towards the penultimate whorl, and extend only up to one third of the whorl; axial ribs number from 36 to 51 on the penultimate whorl. Body whorl either obsoletely plicate or with slightly more distinct angulate and curved axial ribs which extend towards the anterior canal; one or two indistinct, light coloured transverse bands encircle the body whorl. Columella short, plicate, with a broad and flat flesh-coloured cord extending from the centre of the columella towards the anterior canal; anterior canal truncated, moderately broad and straight, stained with brown. Aperture oblong-ovate, lip reflected towards base.

Size: 37 to 60 mm.

Habitat: In clean sand, in shallow and possibly deeper water.

Rare.

Distribution: Southwest, West and East Viti Levu. - Philippines Islands?

Discussion: Subsequent to the description of the species by BURCH (1965), another 8 specimens devoid of animal were collected at *Natadola* (leg. A. Biddle, personal communication). All 16 specimens collected to date at *Natadola* had a portion about 10 mm in width of the outer lip broken off; some specimens regrew a part or the complete missing portion. The *Natadola* specimens ranged in size from 50 to 60 mm, while the only 2 live-collected specimens from Leleuvia Island (East off Viti Levu) and Lautoka, measured 37 and 43 mm respectively; it is interesting to note that the Lautoka specimen had the lip damaged and repaired.

The huge size of the protoconch in comparison with other *Hastula* or *Terebra* species is a rather salient feature of the species.

Paratype no. 3 of *Hastula cernohorskyi*, collected at *Natadola* by A. Morse, measuring 59.8 mm in length, has been deposited with the British Museum (Nat. Hist.) where it bears the register no. 1965142.

48. *Hastula lanceata* (LINNAEUS, 1767)

(Plate 7, Figure 53)

1767. *Buccinum lanceatum* LINNAEUS, Syst. Nat., ed. 12, p. 1206
1921. *Terebra lanceata oahuensis* PILSBRY, Proc. Acad. Nat. Sci. Philadelphia, 69: 307

Shell: Shell moderately small and slender; shining white in colour, ornamented with 10 to 12 narrow, slightly waved dark reddish-brown longitudinal lines, which terminate anteriorly to the suture. Whorls flat, numbering from 15 to 18, apart from protoconch of 2 nuclear whorls; presutural groove absent. Generally smooth on last four whorls with early whorls axially plicate; occasional specimens, however, possess axial ribs as far as the penultimate whorl. Body whorl smooth, with the brown axial lines interrupted by a narrow white peripheral line. Columella

white, with a prominent raised cord on the outer margin; anterior canal straight, aperture elongate and white within. Size: 40 to 60 mm.

Habitat: In clean sand, from 0 - 5 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. - From East Africa through the tropical Indo-Pacific to Polynesia and Hawaii.

Discussion: *Terebra lanceata oahuensis* described from Hawaii, has been separated solely on characters of axial plications. As axially ribbed forms occur sporadically in populations of *T. lanceata* from Fiji and Mauritius, *T. lanceata oahuensis* is regarded as an ecophenotypic variant only.

49. *Hastula lauta* (PEASE, 1869)

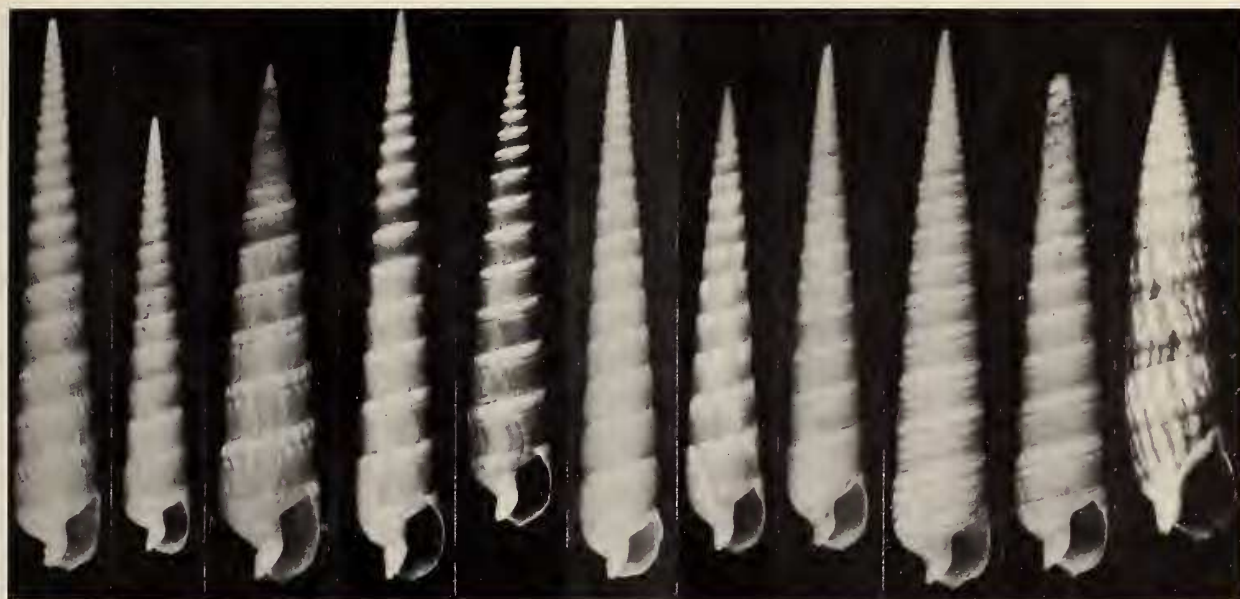
(Plate 7, Figure 51)

1869. *Terebra lauta* PEASE, Amer. Journ. Conch., 5: 66
1925. *Terebra strigilata sumatrana* THIELE, Gastr. Deut. Tiefsee Exp., 17: 344, pl. 29, fig. 20

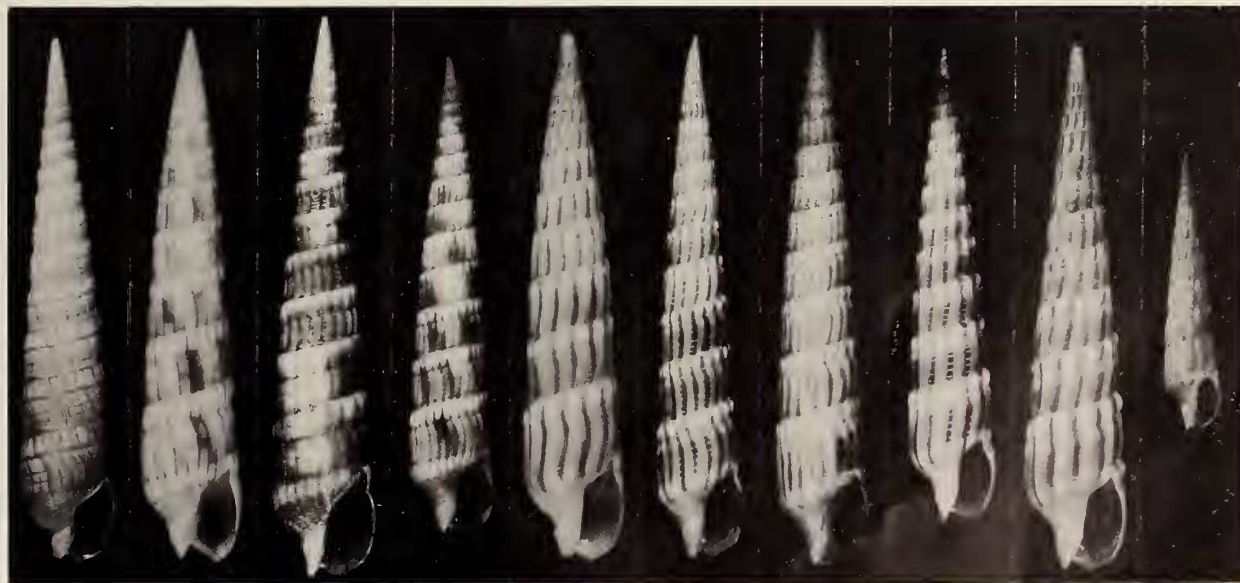
Shell: Shell small and slender; dark grey to greenish-grey in colour, ornamented with blackish-brown somewhat squarish small spots at the sutures, and irregular intervening white spots. Whorls flat or slightly convex, numbering from 11 to 13, apart from protoconch of 3 to 3½ glassy, light tan nuclear whorls; presutural band defined by a narrow deep spiral groove which is confined to the interstices and extends only a short way onto the walls of the axial ribs. Sculpture consists of straight narrow angulate and wide-spaced axial ribs, numbering from 14 to 17 on the penultimate whorl. Body whorl with a narrow white peripheral band, axial ribs becoming obsolete at this point; area near anterior canal white. Columella dark brown, corded on interior margin, with a calloused area extending onto the body whorl; margins of callus corded

Explanation of Plate 5

- Figure 15: *Terebra anilis* (RÖDING). Fiji. x 1.8
Figure 16: *Terebra* species. Fiji. x 1.2
Figure 17: *Terebra amanda* HINDS. Fiji. x 1.75
Figure 18: *Terebra cingulifera* LAMARCK. Fiji. x 1.1
Figure 18a: *T. cingulifera* LAMARCK (forma *albomarginata* DESHAYES). Fiji. x 1.2
Figure 19: *Terebra pallida* DESHAYES. Fiji. x 0.7
Figure 20: *Terebra montgomeryi* R. BURCH, Hypotype no. 1. Fiji. x 1.25
Figure 21: *Terebra laevigata* GRAY. Fiji. x 1.5
Figure 22: *Terebra juniculata* HINDS. Fiji. x 2.0
Figure 23: *Terebra langfordi* PILSBRY. Fiji. x 1.6
Figure 24: *Terebra cerithina* LAMARCK. Fiji. x 1.0
Figure 25: *Terebra babylonica* LAMARCK. Fiji. x 1.0
Figure 26: *Terebra affinis* GRAY. Fiji. x 1.2
Figure 27: *Terebra nebulosa* SOWERBY. Fiji. x 1.0
Figure 28: *Terebra columellaris* HINDS. Fiji. x 1.6
Figure 29: *Terebra undulata* GRAY. Fiji. x 2.0
Figure 30: *Terebra (Decorihastula)* species. Fiji. x 2.0
Figure 31: *Terebra paucistriata* (E. A. SMITH). Fiji. x 2.3
Figure 31a: *T. paucistriata* (E. A. SMITH). Holotype no. B. M. N. H. 1856.11.3.17. Ovalau, Fiji Islands. Length 18.5 mm. Photo British Museum (Natural History).



15 16 17 18 18a 19 20 21 22 23 24



25 26 27 28 29 30 31 31a

and elevated, extending to the anterior canal; aperture convexly rounded, interior dark brown.

Size: 22 to 26 mm.

Habitat: In muddy sand, on weedy substrate, in shallow and deeper water.

Rare.

Distribution: West Viti Levu. – From the Philippine Islands through the tropical Pacific to the Hawaiian Islands.

Discussion: The species has been reported as endemic to the Hawaiian Islands in literature. Reliable records besides Fiji are from the Philippine Islands, New Guinea and West Australia.

50. *Hastula penicillata* (HINDS, 1844)

(Plate 7, Figures 54, 54 a, 54 b, 54 c)

1839. *Terebra lanceata* KIENER (pars), Spéc. Gén. Icon. Coq. Viv., pl. 10, figs. 22 a, 22 b (non *Buccinum lanceatum* LINNAEUS, 1767)

1844. *Terebra penicillata* HINDS, Proc. Zool. Soc. London for 1843: 157

1844. *Terebra venosa* HINDS, Proc. Zool. Soc. London for 1843: p. 157

1859. *Terebra crossi* DESHAYES, Proc. Zool. Soc. London, p. 289

1965. *Hastula (Punctoterebra) betsyae* R. BURCH, The Veliger, 7 (4): 243, pl. 31, fig. 2

Shell: Shell small, moderately slender and solid; variable in colour, but generally ivory-white or cream, ornamented with irregular golden-brown wavy longitudinal lines, extending across the whole width of the whorl; occasional specimens have deep chocolate-brown longitudinal lines and broad transverse bands of the same colour. Whorls flat to slightly convex, numbering from 11 to 15, apart from protoconch of 2 to 3 glassy whitish nuclear whorls; whorls generally smooth; however, occasional individuals have a single spiral line of punctures, situated about one third the width of the whorl anteriorly to the suture. Sculpture consists of somewhat angulate axial ribs on the early whorls, ribs becoming generally obsolete on the last 3 to 4 whorls, and only visible at sutures; occasional specimens, however, are plicate even on the penultimate whorl. Body whorl long and generally smooth, axially lined with golden-brown or blotched on occasions with chocolate-brown. Columella white, sharply corded exteriorly; aperture elongate-ovate, white within, anterior canal straight.

Radula (punctate form): Radular ribbon translucent white, 1.7 mm long and 0.012 mm wide in animal with a shell 39 mm in length; fully-formed rows numbered 37 and teeth in the first three front rows were shorter than

others. Radular teeth consist of a pair of slender and curved teeth which lack accessory cusps or hooks.

Size: 23 to 40 mm.

Habitat: In clean and silty sand, occasionally on weedy substrate, from 0 to 2 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. – From East Africa through the tropical Indo-Pacific to Polynesia and the Hawaiian Islands.

Discussion: The dark chocolate-brown form has been described as *Terebra venosa* HINDS; this form occurs in the Fiji Islands, and we have also seen specimens from Mauritius (leg. E. Couacaud); it has also been figured by C. WEAVER (1960) from the Hawaiian Islands.

The form of *Hastula penicillata* sculptured with a single

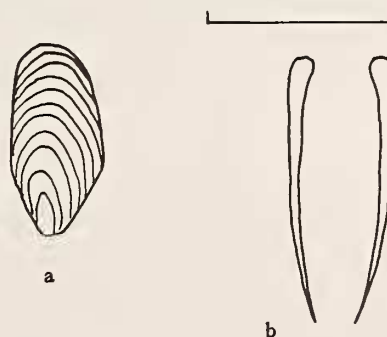


Figure 13

Hastula penicillata (HINDS) (punctate form)
a – Operculum b – One row of radular teeth

row of pits on the whorls has also been collected in Fiji; it is sympatric with the smooth form in South and Southwest Viti Levu. It is interesting to note, however, that all three forms of *H. penicillata* are found together only in silty-sand and weedy localities in Fiji, while only the "typical" smooth, light-coloured form is found in clean sand environment. The senior author collected the smooth form and the spirally punctate form in the same dredge haul from one square yard; an examination of the animals and radulae of both forms did not reveal any differences. The mitrid species *Imbricaria olivaeformis* (SWAINSON, 1821) also occurs either smooth or with spiral rows of punctures in populations of the species in Fiji and the Hawaiian Islands; in Fiji, however, the sculptured form is more prevalent in silty-sand locations.

51. *Hastula plumbea* (QUOY & GAIMARD, 1832)

(Plate 7, Figure 52)

1832. *Terebra plumbea* QUOY & GAIMARD, Voy. Astrol., p. 470, pl. 36, figs. 29, 30
 1859. *Terebra bourguignati* DESHAYES, Proc. Zool. Soc. London, p. 288, no. 66
 1898. *Terebra celidonta* MELVILL & SYKES, Proc. Malacol. Soc. London, 3 (1): 42, pl. 3, fig. 2
 1952. *Terebra hoffmeyeri* ABBOTT, Nautilus, 65 (3): 78, pl. 5, figs. 5-9

Shell: Shell small and slender; greyish-brown to blackish-brown in colour, ornamented with a narrow whitish or fawn transverse presutural band. Whorls slightly convex, numbering from 10 to 12, apart from 2 glassy nuclear whorls. Sculpture consists of sharply angulate almost straight axial ribs; numbering from 13 to 15 on the penultimate whorl; intercostal spaces smooth, except for fine, almost obsolete spiral striae situated on the walls of the axial ribs and almost reaching the apex. Body whorl axially plicate, with a light transverse band situated posteriorly to the columella. Columella brown, prominently corded and with a raised, slightly calloused area extending onto the body whorl; anterior canal recurved, interior of aperture dark brown.

Size: 13 to 24 mm.

Habitat: In muddy and weedy sand, from 0 to 5 fathoms.

Rare.

Distribution: West Viti Levu. – Throughout the Pacific Ocean to the Hawaiian Islands.

52. *Hastula solida* (DESHAYES, 1857)

(Plate 7, Figure 55)

1791. *Buccinum aciculatum* GMELIN, Syst. Nat., ed. 13, p. 3503 (non LAMARCK, 1822) [*nomen oblitum*]

1857. *Terebra solida* DESHAYES, Journ. Conchyl., 6: 78, pl. 3, fig. 11

1912. *Terebra clarkei* H. SMITH, Nautilus, 26 (6): 75, pl. 4, fig. 18

Shell: Shell small and solid, broadening towards aperture; white in colour, ornamented with a narrow cream or light fawn transverse band on whorl. Whorls flat to slightly convex, shouldered at sutures in certain individuals, numbering from 9 to 12, apart from protoconch of $2\frac{1}{2}$ to 3 light orange nuclear whorls. Sculpture consists of straight or only slightly curved broad flattish close-set axial ribs, numbering from 14 to 18 on the penultimate whorl; intercostal spaces smooth and narrow, often stained with orange. Body whorl axially plicate, with three narrow light fawn transverse bands, ultimate band entering aperture. Columella whitish in colour, wide, centrally concave, with an orange spiral cord interiorly and a rounded white or orange cord on the exterior margin; anterior canal straight, aperture elongate, whitish within.

Size: 20 to 28 mm.

Habitat: In clean and slightly muddy sand, from 0-3 fathoms.

Uncommon.

Distribution: Throughout the Fiji Islands. – From the Philippine Islands through the tropical Pacific to Polynesia and Hawaii.

Discussion: GMELIN (1791) referred to CHEMNITZ (1780, vol. 4, pl. 155, fig. 1457) for his *Buccinum aciculatum*; the figure cited is a fair representation of *Hastula solida* (DESHAYES). GMELIN, however, mentioned "excavated punctures" in his description, a feature incompatible with *H. solida*. GMELIN's name, however, should be regarded as a *nomen oblitum* according to article 23b of the Code of the I. C. Z. N. (1961), since it has not been in use in the last 50 years. GMELIN's specific name, however, pre-occupies *Buccinum aciculatum* LAMARCK, 1822, which is a columbellid.

Explanation of Plate 6

- Figure 32: *Terebra kilburni* R. BURCH. Paratype no. 1, Wading Island, Fiji Islands (slender form). x 2.0
 Figure 32 a: *T. kilburni* R. BURCH. Paratype no. 16, Lomalagi, Fiji Islands (obese form). x 3.0
 Figure 33: *Terebra succincta* (GMELIN). Fiji. x 2.0
 Figure 34: *Terebra flavescens* DESHAYES. Fiji. x 2.0
 Figure 35: *Terebra flavofasciata* PILSBRY. Fiji. x 2.0
 Figure 36: *Terebra textilis* HINDS. Fiji. x 2.0
 Figure 37: *Terebra fenestrata* HINDS. Fiji. x 2.5
 Figure 38: *Terebra exigua* DESHAYES. Fiji. x 2.5
 Figure 39: *Terebra multistriata* SCHEPMAN. Fiji. x 3.0
 Figure 40: *Terebra turrita* E. A. SMITH. Fiji. x 3.0
 Figure 40 a: *T. turrita* E. A. SMITH. Fiji. x 3.0
 Figure 40 b: *T. turrita* E. A. SMITH. Holotype no. B. M. N. H.

1965137 ex Cuning Coll. Length 23.0 mm. Photo British Museum (Natural History)

Figure 41: *Terebra* (*Clathroterebra*) species. Fiji. x 3.0

Figure 42: *Terebra fijiensis* E. A. SMITH. Holotype no. B. M. N. H. 1856.10.27.8. Ovalau, Fiji Islands. Length 19.8 mm. Photo British Museum (Natural History)

Figure 43: *Duplicaria tiurensis* (SCHEPMAN). Fiji. x 3.0

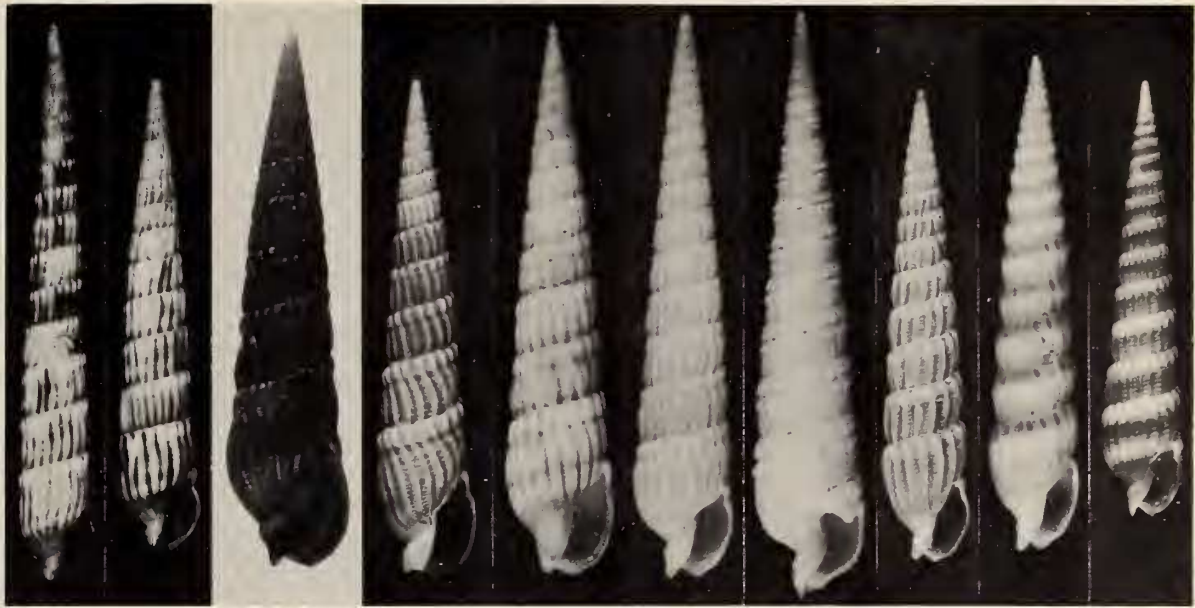
Figure 44: *Duplicaria* species. Fiji. x 1.7

Figure 45: *Duplicaria concolor* (E. A. SMITH). Lectotype no. B. M. N. H. 1965136. Length 22.0 mm. Photo British Museum (Natural History)

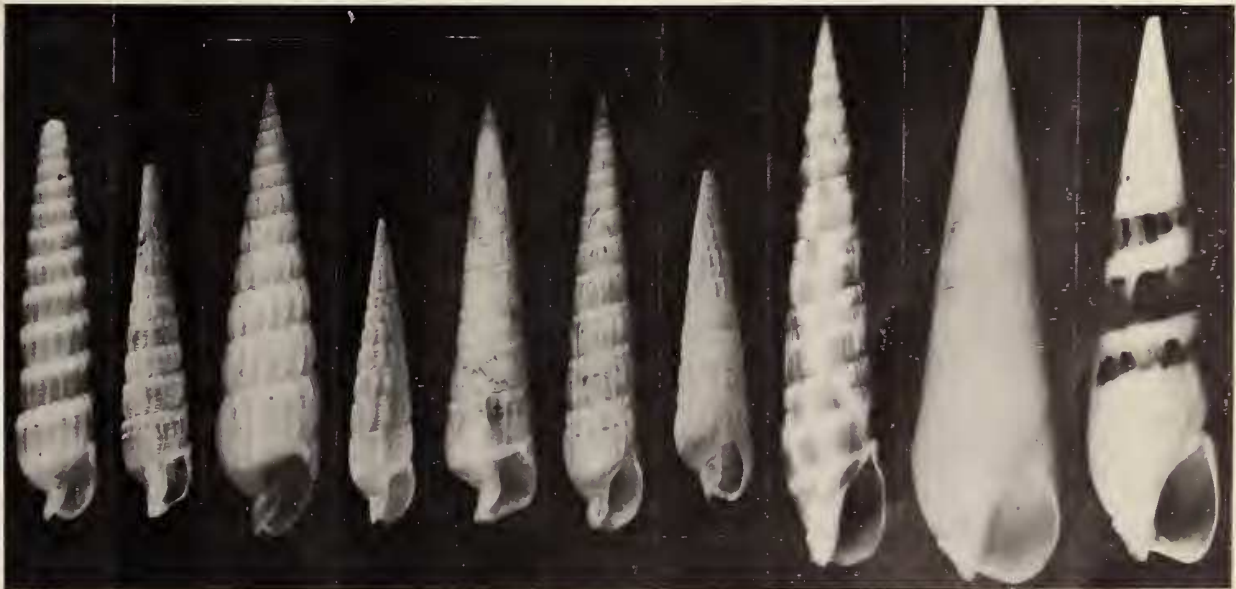
Figure 46: *Decorihastula raphanula* (LAMARCK). Fiji. x 1.4

Figure 47: *Impages hectica* (LINNAEUS). Fiji. x 1.1

Figure 47 a: *I. hectica* (LINNAEUS). Fiji (axially striate variant). x 1.1



32 32 a 33 34 35 36 37 38 39 40



40 a 40 b 41 42 43 44 45 46 47 47 a